



MATHS

BOOKS - PRADEEP PUBLICATION

INTEGRALS

EXAMPLE

1. Write the following results in the integral form:

$$\frac{d}{dx} \left(x^{\frac{3}{2}} \right) = \frac{3}{2} x^{\frac{1}{2}}$$



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2. Write the following results in the integral form:

$$\frac{d}{dx} \left(e^{\sin x} \right) = e^{\sin x} \cos x$$



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3. Write the following statements in the differentiation form:

$$\int 2x. dx = x^2$$



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4. Write the following statements in the differentiation form:

$$\int \frac{1}{2\sqrt{x}} dx = \sqrt{x}$$



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5. Evaluate the following integrals:

$$\frac{1}{3\sqrt{x}} dx$$



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6. Evaluate the following integrals:

$$\int 3^x e^x dx$$



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7. Evaluate the following integrals:

$$\int \frac{1}{1 - \cos^2 x} dx.$$



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8. Evaluate the integral $\int \frac{\sin x}{1 - \sin^2 x} dx.$



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9. Evaluate the following integrals:

$$\int \frac{2\cos^2 x - \cos 2x}{\cos^2 x} dx$$



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10. Evaluate the following integrals:

$$\int \frac{1}{x^2 + 9} dx.$$



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11. Evaluate the following integrals:

$$\int \frac{1}{\sqrt{x^2 - 9}} dx$$



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12. Evaluate the following integrals:

$$\frac{1}{\sqrt{x^2 + 3}} dx.$$

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13. Evaluate the following integrals:

$$\int \tan^{-1} \left(\sqrt{\frac{1 - \cos 2x}{1 + \cos 2x}} \right) dx$$

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14. Find the anti derivative F of f defined by

$$f(x) = 4x^3 - 6, \text{ where } F(0) = 3$$

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15. Evaluate the integral

$$\int \left(10^x + 10x + \frac{10}{x} + \frac{x}{10} + x^{10} + 10^{10} \right) dx$$



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16. Evaluate the integral

$$\int \left(3x^2 + 4x^3 + x^{\frac{2}{3}} + \frac{1}{x} + 1 \right) dx$$



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17. Evaluate the following integrals

$$\int \left(x + \frac{1}{x} \right) \left(\sqrt{x} + \frac{1}{\sqrt{x}} \right) dx$$



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18. Evaluate the following integrals:

$$\int \frac{1}{4x^2 + 9} dx$$



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19.
$$\int \frac{dx}{\sqrt{9 - 25x^2}}$$



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20. Find all the primitives of the following functions:

$$\frac{1}{\sqrt{9x^2 - 4}}$$



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21. Find all the primitives of the following functions:

$$\frac{1}{x^2 + 8x + 20}$$



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22. Find all the primitives of the following functions:

$$\frac{1}{\sqrt{(x+1)(x+5)}}$$



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23. Evaluate:

$$\int \frac{1}{\sqrt{2x^2 - 1}} dx$$



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24. Evaluate:

$$\int \frac{dx}{\sqrt{2x+3} - \sqrt{2x-1}}$$

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25. Evaluate:

$$\int \frac{1}{x} \sqrt{\frac{x-1}{x+1}} dx, x > 1$$

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26. Evaluate the following integrals

$$f\left(x - \frac{1}{x}\right)^3$$

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27. Evaluate the following integrals:

$$\int \frac{(a^x + b^x)^2}{a^x b^x} dx, a, b > 0$$



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28. Evaluate the following integrals:

$$\int (\tan^2 x \sec^2 x) dx$$



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29. Evaluate the following integrals:

$$\int \sqrt{1 + \sin 2x} dx$$





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30. Evaluate the following integrals:

$$\int \frac{1}{1 + \sin x} dx$$



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31. Evaluate the following integrals:

$$\int \frac{(\sec^2 x) dx}{\operatorname{cosec}^2 x}$$



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32. Evaluate the following:

$$\int \cos^{-1}(\sin x) dx, \quad -\frac{\pi}{4} \leq x \leq \frac{\pi}{2}$$

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33. Evaluate the following integrals:

$$\int \tan^{-1}(\sec x + \tan x) dx$$

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34. If $f(x) = x^2 - \frac{1}{x^2}$ and $f(1) = \frac{1}{3}$, find $f(x)$.

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35. Evaluate the following integrals:

$$\int \frac{1}{\sqrt{3x-2}} dx$$



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36. Evaluate the following integrals:

$$\int 3^{-2x} e^{-2x} dx$$



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37. Evaluate the following integrals:

$$\int \sqrt{1 + \sin x} dx, \left(-\frac{\pi}{2} \mid \frac{3\pi}{2} \right).$$





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38. Evaluate the following integrals:

$$\frac{x^3}{x+1} dx$$



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39. Evaluate the following integrals:

$$\int \frac{x^2}{1-x}$$



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40. Evaluate the following integrals:

$$\int \frac{ax + b}{cx + d} dx.$$



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41. Evaluate the following integrals:

$$\int \frac{2x}{(2x + 1)^2} dx$$



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42. Evaluate the following integrals:

$$\int x\sqrt{2x - 3} dx$$



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43. $\int \frac{x^2 + 3}{9x^2 + 4} dx$



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44. Evaluate the following integrals:

$$\int \sin^2 x dx$$



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45. Evaluate the following integrals:

$$\int \cos^4 x dx$$



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46. Evaluate the following integrals:

$$\int \sin 5x \sin 3x dx$$



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47. Evaluate the following integrals:

$$\int \frac{\sin 4x}{\sin x} dx$$



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48. Evaluate the following integrals:

$$\int \sin 2x \cos 3x dx$$



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49. Evaluate $\int \cos mx \cos nx dx$, where m, n are positive integers and $m \neq n$. What happens if $m=n$?



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50. Evaluate $\int \sin x \sin 2x \sin 3x dx$.



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51. Compute the following integrals:

$$\int \frac{\cos x - \sin x}{\sqrt{1 + \sin 2x}} dx$$



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52. Evaluate the following integrals : $\int \frac{\sin^6 x + \cos^6 x}{\sin^2 x \cos^2 x} dx$



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53. The value of $\int \frac{\cos 5x + \cos 4x}{1 - 2\cos 3x} dx$, is



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54. Evaluate: $\int \frac{x^2 + \sin^2 x}{1 + x^2} \sec^2 x dx$.



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55. Evaluate: $\int \sin^2 \left(2 \tan^{-1} \sqrt{\frac{1+x}{1-x}} \right) dx, -1 \leq x < 1.$

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56. Evaluate:

$$\int (\sin^6 + \cos^6 x) dx$$

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57. Integrate the function: $\frac{\sin^8 x - \cos^8 x}{1 - 2 \sin^2 x \cos^2 x}$

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58. Evaluate $\int \cos^6 x dx$.



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59. Evaluate the following integrals:

$$\int x^5 \sqrt{3 + 5x^6} dx$$



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60. Evaluate the following integrals:

$$\int \sec^4 x \tan x dx$$



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61. Evaluate the following integrals:

$$\int (2x + 4)\sqrt{x^2 + 4x + 3} dx$$



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62. Evaluate the following integrals:

$$\int \frac{4x + 2}{\sqrt{x^2 + x + 1}} dx$$



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63. Evaluate the following integrals:

$$\int \frac{\sqrt{x^2 + 1}}{x^4} dx, x > 0$$





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64. Evaluate the following integrals :

$$\int \cos 6x \sqrt{1 + \sin 6x} dx$$



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65. Evaluate the following integrals:

$$\int \frac{\sqrt{3 + \log x}}{x} dx$$



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66. Evaluate the following integrals:

$$\int \cos^5 x \sin 2x dx$$



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67. Evaluate the following integrals:

$$\int \sin^3 x \cos^2 x dx$$



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68. Evaluate the following integrals:

$$\int \frac{\sqrt{\tan x}}{\sin x \cos x} dx$$



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69. Evaluate the following integrals:

$$\int \left(\frac{x + 10(x + \log x)^2}{x} \right) dx$$



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70. Evaluate the following integrals:

$$\int \frac{(x^4 - x)^{\frac{1}{4}}}{x^5} dx, x > 0$$



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71. Evaluate : $\int \sqrt{\frac{1-x}{1+x}} dx$.

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72. Evaluate:

$$\int \frac{1}{(\sin x)^{\frac{3}{4}} (\cos x)^{\frac{5}{4}}} dx$$

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73. $\int \frac{3x-1}{\sqrt{x^2+9}} dx$

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$$74. \int \frac{x + (\cos^{-1}(3x))^2}{\sqrt{1 - 9x^2}} dx$$



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75. Integrate the function

$$\frac{x^3 \sin(\tan^{-1} x^4)}{1 + x^8}$$



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76. Evaluate $\int x \log x (\log x - 1) dx$.



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77. Evaluate $\int \frac{1}{x \log x \log(\log x)} dx$

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78. Evaluate the following integrals:

$$\int \frac{1+x}{x^2+2x-3} dx$$

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79. Evaluate the following integrals:

$$\int \frac{\operatorname{cosec}^2 x}{1 + \cot x} dx$$

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80. Evaluate the following integrals:

$$\int \frac{1}{a + be^x} dx$$



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81. Evaluate the following integrals : $\int \frac{e^{2x} + 1}{e^{2x} - 1} dx$



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82. Compute the following integrals:

$$\int \frac{1 - \tan x}{1 + \tan x} dx$$



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83. Compute the following integrals:

$$\int \frac{\sin 2x}{(a + b \cos x)^2} dx$$



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84. Evaluate the following integrals:

$$\int \frac{1 + \sin 2x}{x + \sin^2 x}$$



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85. Evaluate the following integrals :

$$\int \frac{\cos 2x}{(\cos x + \sin x)^2} dx$$

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86. Evaluate

$$\int \frac{\tan x \sec^2 x}{1 - \tan^2 x} dx$$

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87. Evaluate: $\int \frac{\sqrt{1 + \cos x}}{(1 - \cos x)^{5/2}} dx$

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88. Evaluate $\int \cot^4 x dx$



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89. Evaluate the following integrals:

$$\int \cot(3 - 2x) dx$$



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90. Evaluate the following integrals:

$$\int \tan^3 x dx$$



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91. Compute the following integrals:

$$\int \frac{\sin x}{\sin(x - \alpha)} dx$$



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92. Evaluate: $\int \frac{\sin(x - a)}{\sin(x + a)} dx$



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93. Evaluate the following integrals:

$$\int (\tan x \tan 2x \tan 3x) dx$$



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94. Evaluate the following integrals:

$$\int \frac{1 + \tan^2\left(\frac{\pi}{4} + x\right)}{1 - \tan^2\left(\frac{\pi}{4} + x\right)} dx$$



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95. Evaluate the following integrals:

$$\int \frac{dx}{\sin x + \sqrt{3}\cos x}$$



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96. Evaluate

$$\int \frac{1}{\sin(x+a)\cos(x+b)} dx$$



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97. Evaluate $\int \frac{1}{\cos(x-a)\cos(x-b)} dx$



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98. Evaluate: $\int \frac{\sin x}{\sqrt{1 + \sin x}} dx$



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99. Evaluate

$$\int \frac{dx}{a \sin x + b \cos x}$$



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100. Evaluate

$$\int \frac{dx}{(a \sin x + b \cos x)^2}$$



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101. Evaluate the following integrals :

$$\int \frac{1}{x - \sqrt{x}} dx$$



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102. Evaluate the following integrals: $\int \frac{1}{(x+1)\sqrt{x}} dx$



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103. Evaluate the following integrals:

$$\int x^2 \cdot 3\sqrt{2x-1} dx$$



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104. Evaluate the following integrals:

$$\int \frac{x^2}{(a+bx)^2} dx$$



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105. Evaluate $\int \frac{dx}{\sqrt{x+1} + \sqrt{x+2}}$



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106. Evaluate the following integrals:

$$\int \frac{x+3}{\sqrt{5-4x-x^2}} dx$$



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107. Evaluate $\int \frac{1}{\sqrt{\sin^3 x \sin(x+\alpha)}} dx$.



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108. Evaluate $\int \frac{1}{\sqrt{1 - e^{2x}}} dx$

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109. Evaluate $\int \frac{e^{\tan^{-1}x}}{1 + x^2} dx$

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110. Evaluate $\int \frac{\sin(\tan^{-1}x)}{1 + x^2} dx.$

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111. Evaluate the following integrals : $\int \frac{\sin(2\tan^{-1}x)}{1+x^2} dx$

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112. Evaluate the following integrals : $\int x^2 e^{x^3} \cos(e^{x^3}) dx$

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113. Evaluate the following integrals:

$$\int \frac{xe^{\sqrt{x^2+1}}}{\sqrt{x^2+1}} dx$$

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114. Evaluate the following integrals:

$$\int \frac{\cos x}{\sqrt{\sin^2 x - 2\sin x - 3}} dx$$



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115. Evaluate the following integrals:

$$\int e^{\sin^2 x} \sin 2x dx$$



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116. Evaluate the following integrals:

$$\int x \cos^3 x^2 \sin x^2 dx$$



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117. Evaluate the following integrals : $\int \frac{\tan^4 \sqrt{x} \sec^2 \sqrt{x}}{\sqrt{x}} dx$



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118. Evaluate the following integrals:

$$\int \frac{\tan x + \tan^3 x}{1 + \tan^3 x} dx$$



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119. Evaluate the following integrals : $\int \frac{\cos x - \sin x}{1 + \sin 2x}$



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120. Find all the primitives of the following functions

(by suitable substitutions):

$$\frac{e^x}{e^x + 3} dx$$



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121. Find all the primitives of the following functions

(by suitable substitutions):

$$\int \frac{\sin x}{9 + 25\cos^2 x} dx$$

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122. Compute the following integrals:

$$\int \frac{\sin 2x}{a^2 \sin^2 x + b^2 \cos^2 x} dx$$

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123. Evaluate the following integrals:

$$\int \frac{dx}{1 + 3\sin^2 x}$$

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124. Evaluate the following integrals:

$$\int \sin^5 x dx$$



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125. Evaluate the following integrals:

$$\int \sin^2 x \cos^3 x dx$$



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126. Compute the following integrals:

$$\int \sec x \log(\sec x + \tan x) dx$$



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127. Evaluate the following integrals :

$$\int_0^{\pi/2} \frac{\cos x}{\left(\frac{\cos(x)}{2} + \frac{\sin(x)}{2}\right)^3} dx$$

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128. Evaluate $\int \sec^6 x dx$

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129. Evaluate $\int \frac{\sin(\log x)}{x} dx$

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130. Evaluate: $\int \sqrt{\sec x - 1} dx, 0$



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131. Integrate the function: $\sqrt{\frac{1 - \sqrt{x}}{1 + \sqrt{x}}}$



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132. Evaluate: $\int \frac{\sec^2(x)}{\tan x} dx$



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133. Compute the following integrals:

$$\int \frac{\sin(x + \alpha)}{\sin(x - \alpha)} dx$$

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134. Evaluate: $\int \frac{dx}{a^2 \sin^2 x + b^2 \cos^2 x}$

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135. Evaluate the following integrals:

$$\int x e^{3x} dx$$

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136. Evaluate the following integrals:

$$\int (2x + 1)\sin x dx.$$

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137. Evaluate the following integrals:

$$\int \log(x + 1)$$

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138. Evaluate the following integrals:

$$\int x^n \log x dx$$

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139. Evaluate the following integrals:

$$\int (1 + x) \log x dx$$

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140. Evaluate the following integrals:

$$\int \tan^{-1} x dx$$

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141. Evaluate the following integrals:

$$\int (3 - x) \sin 3x dx$$



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142. Evaluate the following integrals : $\int x^3 \sin(x^4) dx$

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143. Evaluate the following integrals:

$$\int (\tan^{-1} x) x dx$$

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144. Evaluate the following integrals : $\int \frac{x \sin^{-1} x}{\sqrt{1-x^2}} dx$

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145. Evaluate the following integrals : $\int \frac{x \sin^{-1} x}{\sqrt{1-x^2}} dx$

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146. Evaluate : $\int \sin^{-1} \left(\sqrt{\frac{x}{a+x}} \right) dx$

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147. Evaluate: $\int \frac{\cos^{-1} x}{x^2} dx$

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148. Evaluate the following integrals:

$$\int \sin^{-1}\left(\frac{2x}{1+x^2}\right) dx$$



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149. Evaluate the following integrals:

$$\int \sec^3 x dx$$



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150. Evaluate the following integrals:

$$\int \sin(\log x) dx$$



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151. Evaluate $\int |x| dx$



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152. Evaluate the following integrals: $\int e^x \sin 3x dx$



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153. Evaluate the following integrals:

$$\int x^3 e^{x^4} \cos x^4 dx.$$



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154. Evaluate $\int (\sin^{-1}x)^2 dx$

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155. Evaluate $\int x(\log x)^2 dx$.

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156. Evaluate $\int \tan^{-1}x dx$.

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157. Taking x^2 as $x^3 \left(\frac{1}{x} \right)$ integrate by parts. Use this to

find $\int x^2 \log x dx$

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158. Evaluate: $\int e^{\tan^{-1}x} \left(\frac{1+x+x^2}{1+x^2} \right) dx$

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159. Evaluate : $\int \left[\log(\log x) + \frac{1}{(\log x)^2} \right] dx.$

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160. Find the indefinite integral:

$$\int \cos 2\theta \ln \left(\frac{\cos \theta + \sin \theta}{\cos \theta - \sin \theta} \right) d\theta$$



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161. Evaluate: $\int e^{\sin x} \left(\frac{x \cos^3 x - \sin x}{\cos^2 x} \right) dx$



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162. Integrate the function:

$$\frac{\sqrt{x^2 + 1} \left[\log(x^2 + 1) - 2\log x \right]}{x^4}$$

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163. Evaluate: $\int \frac{x \log x}{\sqrt{(x^2 - 1)^3}} dx, x > 1$

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164. Integrate $\int \frac{\sin 2x}{a^2 \sin^2 x + b^2 \cos^2 x} dx$

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165. Evaluate $\int \left(\frac{\sin^{-1}\sqrt{x} - \cos^{-1}\sqrt{x}}{\sin^{-1}\sqrt{x} + \cos^{-1}\sqrt{x}} \right) dx.$

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166. Find $\int \frac{x^2 dx}{(x \sin x + \cos x)^2}$

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167. Evaluate the following integrals:

$$\int e^x (\tan x + \operatorname{logsec} x) dx$$

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168. Evaluate the following integrals:

$$\int e^x \sec x (1 + \tan x) dx$$



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169. Evaluate the following integrals:

$$\int e^x \left(\tan^{-1} x + \frac{1}{1+x^2} \right) dx$$



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170. Evaluate the following integrals:

$$\int \frac{(x^2 + 1)e^x}{(x + 1)^2} dx$$



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171. Evaluate $\int e^x \left(\frac{1 + \sin x}{1 + \cos x} \right) dx$



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172. Evaluate: $\int \frac{x + \sin x}{1 + \cos x} dx$



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173. Evaluate $\int \frac{(2x - 5)e^{2x}}{(2x - 3)^3} dx$



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174. Evaluate: $\int \frac{x^3 - x + 1}{x^2 + 1} dx.$

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175. Evaluate: $\int e^{2x}(2\sin x + \cos x)dx$

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176. Evaluate: $\int e^x \left(\frac{\sin 4x - 4}{1 - \cos 4x} \right) dx.$

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177. Integrate the following functions:

$$\sqrt{9 - 4x^2}$$



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178. Integrate the following functions:

$$\sqrt{10 - 8x - 2x^2}$$



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179. Integrate the following functions:

$$\frac{x + 2}{\sqrt{(x - 2)(x + 3)}}$$



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180. Integrate the following functions:

$$\frac{x^2 - 3x + 1}{\sqrt{1 - x^2}}$$



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181. Evaluate the following integrals:

$$\int x \sin^{-1} x dx$$



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182. Integrate the following functions:

$$\sqrt{x^{-6}}$$

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183. Integrate the following functions:

$$\sqrt{3 - 2x - x^2}$$

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184. Integrate the following functions:

$$(x - 5)\sqrt{x^2 + x}$$

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185. Integrate the following functions:

$$(x + 3)\sqrt{3 - 4x - x^2}$$

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186. Integrate the following functions:

$$(1 - 2x)\sqrt{2 + x - x^2}.$$

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187. Evaluate the following integrals: $\int \frac{x}{1 - x^4} dx$

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188. Evaluate the following integrals: $\int \frac{x}{1-x^4} dx$



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189. Evaluate the following integrals:

$$\int \frac{x^2}{1-x^4} dx.$$



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190. Evaluate $\int \log|4x^2 - 1| dx$.



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191. Evaluate : $\int \frac{\sin x}{\sin 3x} dx$



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192. Evaluate the following integrals:

$$\int \frac{1}{2x^2 - x - 1} dx$$



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193. Evaluate the following integrals:

$$\int \frac{1}{3x^2 + 13x - 10} dx$$



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194. Evaluate the following integrals: $\int \frac{3x + 1}{(x + 1)^2(x + 3)} dx$



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195. Evaluate the following integrals:

$$\int \frac{x}{2x^2 - 2x + 1} dx$$



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196. Find the following integral: $\int \frac{x + 2}{2x^2 + 6x + 5} dx$



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197. Evaluate the following integrals:

$$\int \frac{5x - 2}{1 + 2x + 3x^2} dx$$

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198. Evaluate : $\int \frac{x}{x^4 + x^2 + 1} dx$

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199. Evaluate: $\int \frac{4x^2 + 3}{8x^2 + 4x + 5} dx$

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200. Evaluate the following integrals:

$$\int \frac{x^2}{(x-1)(x-2)(x-3)} dx$$



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201. Evaluate the following integrals:

$$\int \frac{3x+1}{(x-2)^2(x+2)} dx$$



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202. Evaluate the following integrals:

$$\int \frac{1-x^2}{x(1-2x)} dx.$$



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203. Evaluate the following integrals:

$$\int \frac{2x}{(x^2 + 1)(x^2 + 3)} dx$$



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204. Evaluate the following integrals: $\int \frac{1}{x(x^7 - 1)} dx$



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205. Evaluate the following integrals:

$$\int \frac{x}{3x^4 - 18x^2 + 11} dx$$



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206. Evaluate the following integrals: $\int \frac{x^2 + 1}{x^2 - 5x + 6} dx$



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207. Evaluate $\int \frac{2\sin 2x - \cos x}{6 - \cos^2 x - 4\sin x} dx$.



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208. Evaluate

$$\int \frac{(3\sin x - 2)\cos x}{5 - \cos^2 x - 4\sin x} dx$$



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209. Evaluate the following integrals:

$$\int \frac{dx}{\sin x + \sin 2x}$$

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210. Evaluate the following integrals:

$$\int \frac{x+1}{x(1+xe^x)} dx$$

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211. Integrate the following functions:

$$\frac{x^2}{(x-1)^3(x+1)}$$



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212. Integrate the following functions:

$$\frac{3x^2 + 4x + 1}{(x+2)(x^2+1)}$$



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213. Integrate the following functions:

$$\frac{1}{(e^x - 1)^2}$$



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214. Integrate the following functions:

$$3 \frac{x^2}{x^3 + 1}$$



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215. Evaluate: $\int \frac{\log x}{(x + 1)^2} dx$



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216. Evaluate the following integrals:

$$\int \frac{x^2}{(x-1)(x-2)(x-3)} dx$$

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217. Evaluate

$$\int \frac{x^4}{(x-1)(x^2+1)} dx$$

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218. Evaluate $\int \frac{x^2}{x^4 + x^2 - 2} dx$

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219. Evaluate:

$$\int \frac{2x^5 + x^4 - 2x^3 + 2x^2 + 1}{(x^2 + 1)(x^4 - 1)} dx$$



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220. Evaluate: $\int \frac{1}{(\sin x - 2\cos x)(2\sin x + \cos x)} dx.$



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221. Evaluate: $\int \frac{\sqrt{\cos x}}{\sin x} dx$



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222. Evaluate the following integrals:

$$\int \frac{x^2}{(x^2 + 1)(x^2 + 4)} dx$$

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223. Evaluate the following integrals: $\int \frac{x^2}{x^4 + x^2 + 1} dx$

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224. Evaluate the following integrals:

$$\int \frac{x^2 + 1}{(x^2 + 4)(x^2 + 25)} dx$$

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225. Evaluate the following integrals:

$$\int \frac{x^2 + 2}{x^4 + 4} dx$$

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226. Evaluate : $\int \sqrt{\tan x} dx$

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227. Evaluate: $\int (\sqrt{\tan x} + \sqrt{\cot x}) dx$

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228. Evaluate $\int \frac{1}{x+1} dx$

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229. Evaluate $\int \frac{4}{\sin^4 x + \cos^4 x} dx$.

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230. Evaluate:

$$\int \frac{\sin x + \cos x}{\sin^4 x + \cos^4 x} dx$$



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231. Evaluate the following integrals:

$$\int \frac{dx}{5 + 4\cos x}$$



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232. Evaluate the following integrals:

$$\frac{dx}{1 - 2\sin x}$$



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233. Evaluate the following integrals:

$$\frac{1}{1 + 2\cos\theta} d\theta$$



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234. Evaluate: $\int \frac{1 + \sin x}{\sin x(1 + \cos x)} dx$



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235. Evaluate: $\int \frac{dx}{1 - \cot x}$



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236. Evaluate: $\int \frac{1}{1 + \tan x} dx$

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237. Evaluate $\int \frac{dx}{1 + \sin x + \cos x}$

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238. Evaluate: $\int \frac{dx}{1 - \sec x}$

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239. Evaluate : $\int \frac{dx}{a + b\cos x}$

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240. Evaluate the following integrals: $\int \frac{1}{\sqrt{5x^2 - 2x}} dx$

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241. Evaluate the following integrals:

$$\int \frac{1}{\sqrt{\frac{8}{3}x - x^2}} dx$$

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242. Evaluate the following integrals:

$$\int \frac{1}{\sqrt{x^2 + 12x + 11}} dx$$



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243. Evaluate the following integrals: $\int \frac{dx}{\sqrt{(x-a)(x-b)}}$



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244. Evaluate the following integrals:

$$\int \frac{x + 3}{\sqrt{5 - 4x - x^2}} dx$$



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245. Evaluate the following integrals:

$$\int \frac{3x + 2}{\sqrt{3x^2 + 8x + 4}}$$

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246. Evaluate $\int \frac{2x}{\sqrt{1 - x^2 - x^4}} dx$

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247. Evaluate the following integrals: $\int \frac{6x + 7}{\sqrt{(x - 5)(x - 4)}} dx$



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248. Evaluate the following integrals:

$$\int \frac{x + 2}{\sqrt{x^2 + 5x + 6}} dx$$

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249. Evaluate:

$$\int \frac{x^2 - x + 1}{\sqrt{x^2 + x + 1}} dx$$

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250. Evaluate the following integrals:

$$\int \frac{1}{(ax - 9)^{3/2}} dx, a > 0$$



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251. Evaluate the following integrals:

$$\int x\sqrt{3 - x^2} dx$$



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252. Evaluate the following integrals:

$$\int \frac{x^3}{\sqrt{x^2 - 1}} dx, x > 1$$



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253. Evaluate the following integrals:

$$\int \frac{\sqrt{1+x^2}}{x^4} dx$$



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254. Evaluate the following integrals:

$$\int \frac{dx}{\sqrt{49-x^2}}$$



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255. Evaluate: $\int \frac{dx}{(x^2 + a^2)^{5/2}}, a > 0$

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256. Evaluate: $\int \frac{dx}{(a^2 + x)^{3/2}}, a > 0$

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257. Evaluate $\int \frac{\sin^3(\theta/2)d\theta}{\cos\theta/2\sqrt{\cos^3\theta + \cos^2\theta + \cos\theta}}$.

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258. Evaluate the following integrals: $\int \frac{dx}{(x-1)\sqrt{x+2}}$



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259. Evaluate the following integrals:

$$\int \frac{x+2}{(x^2+3x+3)\sqrt{x+1}} dx$$



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260. Evaluate the following integrals: $\int \frac{dx}{(x-1)\sqrt{x^2+4}}$



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261. Evaluate the following integrals:

$$\int \frac{\sqrt{x^2 - 16}}{x} dx, x > 0.$$



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262. Evaluate: $\int \frac{1}{\sqrt{x^2 - 49}} dx, x > 0$



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263. Evaluate: $\int \frac{dx}{(x^2 + 8x + 16)}$



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264. Evaluate:

$$\int \frac{x - 1}{(x + 1)\sqrt{x^3 + x^2 + x}} dx$$



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265. Find $\int_1^5 (2x + 1) dx$ as the limit of a sum and verify the result by calculating the area of the region represented by it.



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266. Evaluate $\int_0^2 -1(7x - 5) dx$ as the limit of a sum.





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267. Evaluate $\int_1^2 (x^2 - 1) dx$ as the limit of a sum.



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268. Evaluate: $\int_0^2 (3x^2 - 4) dx$ as the limit of a sum.



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269. Evaluate: $\int_0^2 (3x^2 - 4) dx$ as the limit of a sum.



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270. Evaluate $\int ax^2 dx$.

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271. Evaluate: $\int_1^4 (x^2 - x) dx$.

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272. Evaluate: $\int_1^3 (2x^2 + 5x) dx$.

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273. Evaluate: $\int_0^1 x^3 dx$.

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274. Evaluate: $\int_0^\pi \sin x dx$.

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275. Evaluate: $\int_a^b ae^x dx$.

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276. Evaluate: $\int_1^3 (e^{2-3x} + x^2 + 1) dx$.

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277. Evaluate: $\int_a^b \sqrt{x} dx$, as the limit of a sum. It is given that $b > a > 0$.

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278. Evaluate:

$$\int_{-1}^3 (x^2 + 1) dx.$$

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279. Evaluate:

$$\int_0^4 \frac{1}{1-3p} dp$$



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280. Evaluate:

$$\int_0^4 \sqrt{16-x^2} dx.$$



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281. Evaluate:

$$\int_2^3 \frac{x}{x^2+1} dx.$$



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282. Evaluate the following:

$$\int_0^{\frac{\pi}{4}} \sqrt{1 - \sin 2x} dx$$



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283. Evaluate the following:

$$\int_0^{\frac{\pi}{2}} \cos^4 x dx.$$



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284. Evaluate the following integrals : $\int_0^1 \frac{\tan^{-1}x}{1+x^2} dx$

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285. Evaluate the following:

$$\int_0^1 \frac{1}{e^x + e^{-x}} dx$$

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286. Evaluate the following:

$$\int_0^{\frac{\pi}{4}} (\sin 2t \cos 2t) dt$$

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287. Evaluate the following:

$$\int_1^2 \frac{x+2}{x(x+3)} dx$$



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288. Evaluate the following:

$$\int_1^2 xe^x dx.$$



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289. Evaluate the following:

$$\int_0^1 xe^{x^2} dx.$$



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290. Evaluate the following:

$$\int_4^9 \frac{\sqrt{3}}{(30 - x^3/2)^2} dx$$



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291. Evaluate the following:

$$\int_0^{\frac{\pi}{2}} x^2 \sin 2x dx$$



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292. Evaluate the following:

$$\int_0^{\sqrt{2}} \sqrt{2-x^2} dx$$



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293. Evaluate the following:

$$\int_1^2 \frac{1}{\sqrt{(x-1)(2-x)}} dx$$



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294. If $\int_0^a x\sqrt{x} dx = \frac{3}{5} a^2 \int_0^{\pi/2} \sin^3 x dx$, find the value of

$$\int_0^{a+1} ax dx.$$



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295. Evaluate: $\int_0^1 x \sqrt{\frac{1-x^2}{1+x^2}} dx$



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296. Evaluate the following integrals :

$$\int_0^{\pi/2} \frac{\sin 2x}{\sin^4 x + \cos^4 x} dx$$



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297. Evaluate the following integrals:

$$\int_0^{\pi/2} \frac{\tan x}{1 + m^2 \tan^2 x} dx$$



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298. Evaluate: $\int_0^{\pi/2} x \sin^2 x \cos x dx$



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299. Evaluate: $\int_0^{\pi/2} \sin 2x \tan^{-1}(\sin x) dx$



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300. Evaluate: $\int_0^{\pi/2} \frac{x + \sin x}{1 + \cos x} dx$

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301. Evaluate the following:

$$\int_1^4 \frac{x^2 + x}{\sqrt{2x + 1}} dx$$

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302. Evaluate the following:

$$\int_0^{\pi/2} \sqrt{\cos \theta \sin^3 \theta} d\theta$$

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303. Evaluate the following:

$$\int_0^{1/2} \frac{\sin^{-1}x}{(1-x^2)^{3/2}} dx.$$



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304. Evaluate the following:

$$\int_0^{\pi/2} \frac{dx}{3+2\cos x}.$$



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305. Evaluate the following

$$\int_0^{\pi} \frac{dx}{5+4\cos x}$$

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306. Evaluate the following

$$\int_0^{\frac{\pi}{2}} \frac{1}{5\cos x + 3\sin x} dx.$$

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307. Evaluate the following integrals : $\int_0^{\pi/4} \frac{\sin x + \cos x}{9 + 16\sin 2x}$

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308. Evaluate:

$$\int_0^{\pi/4} \frac{\sin x \cos x}{\sin^4 x + \cos^4 x} dx$$



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309. Evaluate: $\int_0^{\pi/2} \frac{\cos^2 x}{\cos^2 x + 4\sin^2 x} dx$



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310. Evaluate:

$$\int_0^{\pi/4} \frac{1}{\cos^3 x \sqrt{2\sin 2x}} dx$$



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311. Evaluate the following: $\int_1^2 \frac{5x^2}{x^2 + 4x + 3} dx$

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312. Evaluate

$$\int_0^a \frac{dx}{\sqrt{ax - x^2}}.$$

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313. Evaluate

$$\int_1^2 \frac{1}{x(x^4 + 1)} dx.$$



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314. Evaluate:

$$\int_{\pi/3}^{\pi/2} \frac{\sqrt{1 + \cos x}}{(1 - \cos x)^{7/2}} dx$$



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315. Evaluate:

$$\int_{\pi/6}^{\pi/3} \frac{\sin x + \cos x}{\sqrt{\sin 2x}} dx.$$



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316. Show that : $\int_0^{\pi/2} (\sqrt{\tan x} + \sqrt{\cot x}) dx = \sqrt{2}\pi.$



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317. Evaluate: $\int_0^{\pi/2} \frac{dx}{(a^2 \sin^2 x + b^2 \cos^2 x)^2}.$



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318. Determine a +ve integer $n \leq 5$ such that

$$\int_0^1 e^x (x - 1)^n dx = 16 - 6e.$$



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319. Let $f(x) = \begin{cases} x & 0 \leq x < 1 \\ 1 - x & 1 \leq x \leq 2 \end{cases}$. Evaluate $\int_0^2 f(x) dx$.



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320. Evaluate

$$\int_0^1 |2x - 1| dx$$



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321. Evaluate

$$\int_0^8 |x - 5| dx$$



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322. Evaluate

$$\int_0^4 |x^2 - 4| dx$$



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323. Evaluate: $\int_0^2 |x^2 + 2x - 3| dx$



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324. Evaluate

$$\int_0^2 -1f(x) dx, \text{ where } f(x) = |x+1| + |x| + |x-1|$$



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325. Evaluate: $\int_0^4 (|x| + |x - 2| + |x - 4|) dx$

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326. Evaluate: $\int_{-1}^2 |x^3 - x| dx$

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327. Prove that: $\int_a^b \frac{f(x)}{f(x) + f(a + b - x)} dx = \frac{b - a}{2}$

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328. Evaluate:

$$\int_{\pi/6}^{\pi/3} \frac{1}{1 + \sqrt{\tan x}} dx$$



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329. Evaluate the following integrals:

$$\int_0^a \frac{\sqrt{x}}{\sqrt{x} + \sqrt{a-x}} dx$$



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330. Evaluate the following integrals:

$$\int_0^{\pi/2} \frac{\sin^4 x}{\sin^4 + \cos^4 x} dx$$





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331. Evaluate:

$$\int_0^3 2x\sqrt{5-x} dx.$$



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332. Evaluate:

$$\int_0^{\pi/2} \cos^2 x dx.$$



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333. Evaluate:

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \cos^4 x dx$$

by using properties of definite integrals



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334. Evaluate:

$$\int_{-\pi}^{\pi} (\cos ax - \sin bx)^2 dx$$



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335. Evaluate: $\int_0^{\pi} \frac{x \sin x}{1 + \cos^2 x} dx$



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336. Evaluate the following integrals:

$$\int_0^{\pi/2} \frac{\sin x - \cos x}{1 + \sin x \cos x} dx$$



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337. Evaluate

$$\int_0^{\pi/2} \frac{x \sin x \cos x}{\sin^4 x + \cos^4 x} dx$$



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338. Evaluate

$$\int_0^{\pi} \left(\frac{x}{1 + \sin^2 x} \right) dx$$



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339. Evaluate

$$\int_0^{\pi} \frac{x dx}{1 + \sin x}$$



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340. $\int_0^{\frac{\pi}{2}} \sin^6 x dx.$



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341. Evaluate:

$$\int_0^{2\pi} \frac{\sin^2 \theta}{a - b \cos \theta} d\theta, \quad a > b > 0$$



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342. Prove that:

$$\int_0^{\pi} \frac{x}{1 + \sin \alpha \sin x} dx = \frac{\pi}{\cos \alpha} \left(\frac{\pi}{2} - \alpha \right).$$



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343. Evaluate the following integrals.

$$\int_0^{\pi} \frac{x dx}{a^2 - \cos^2 x}, (a > 1)$$



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344.
$$\int_0^{\pi/2} \frac{dx}{a^2 \cos^2 x + b^2 \sin^2 x}$$



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345. Evaluate:

$$\int_{-1/2}^{3/2} |x \sin \pi x| dx$$



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346. Prove that:

$$\int_0^{\pi/2} \text{of}(\sin 2x) \sin x dx = \sqrt{2} \int_0^{\pi/4} \text{of}(\cos 2x) \cos x dx$$



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347. Evaluate: $\int_0^1 \log\left(\frac{1}{x} - 1\right) dx$



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348. Evaluate: $\int_0^1 \frac{\log(1+x)}{1+x^2} dx$



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349. Evaluate:

$$\int_0^{\pi/2} \log(\sin x) dx$$



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$$350. \int_{\frac{\pi}{4}}^{\frac{\pi}{2}} e^x (\log \sin x + \cot x) dx$$



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351. Evaluate:

$$\int_0^{\pi} x \log(\sin x) dx$$



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352. Evaluate: $\int_{-2}^2 \frac{x^2}{1+5^x} dx$.

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353. Evaluate:

$$\int_0^{\infty} \frac{1}{1+x^2} \log\left(x + \frac{1}{x}\right) dx$$

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354. Evaluate:

$$\int_{-\infty}^{\infty} x e^{-x^2} dx$$



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355. If f is periodic with period p , prove that $\int_a^{a+p} f(x) dx$ is independent of a .

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EXERCISE

1. For the following differentiation results, write down the corresponding results in integrations:

$$\frac{d}{dx} (\sin^{-1} x) = \frac{1}{\sqrt{1-x^2}}.$$

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2. For the following (1 - 4) different results, Write the

corresponding integration results : $\frac{d}{dx}(\sin 2x) = 2\cos 2x$



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3. For the following differentiation results, write down

the corresponding results in integrations:

$$\frac{d}{dx}(\tan^{-1}x) = \frac{1}{1+x^2}$$



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4. For the following differentiation results, write down the corresponding results in integrations:

$$\frac{d}{dx} \left(e^{\tan x} \right) = e^{\tan x} \sec^2 x$$



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5. For the following differentiation results, write down the corresponding results in integrations:

$$\frac{d}{dx} \left(e^{x^2} \right) = 2xe^{x^2}$$



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6. For the following differentiation results, write down the corresponding results in integrations:

$$\frac{d}{dx}(\sin^2 x) = \sin 2x.$$



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7. For the following results in integration, write down the corresponding differentiation results:

$$\int \frac{dx}{1-x^2} = \sin^{-1} x$$



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8. For the following results in integration, write down the corresponding differentiation results:

$$\int a^{2x} dx = \frac{a^{2x}}{2 \log a}, a > 0, a \neq 1$$

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9. For the following (5 - 7) different results, Write the corresponding integration results :

$$\int \operatorname{cosec}(3x + 4) \cot(3x + 4) dx = -\frac{1}{3} \operatorname{cosec}(3x + 4).$$

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10. Evaluate:

$$\int x^{99} dx$$



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11. Evaluate:

$$\int \frac{1}{\sqrt{x}} dx.$$



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12. Evaluate:

$$\int \frac{1}{t^{\frac{5}{3}}} dt.$$



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13. Evaluate:

$$\int \frac{1}{y} dy$$

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14. Evaluate $\int 7^x dx$

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15. Evaluate:

$$\int \frac{2^x}{3^x} dx$$



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16. Evaluate:

$$\int \sin x \sec^2 x dx$$

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17. prove: $\int \frac{\cos 2x + 2\sin^2 x}{\cos^2 x} dx = \tan x + c.$

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18. Evaluate:

$$\int 2\sin\left(\frac{x}{2}\right)\cos\left(\frac{x}{2}\right) dx$$



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19. Evaluate:

$$\int \frac{1}{x\sqrt{x^2 - 4}} dx$$



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20. Evaluate:

$$\int \frac{1 - \tan^2\left(\frac{x}{2}\right)}{1 + \tan^2\left(\frac{x}{2}\right)} dx$$



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21. Evaluate:

$$\int \frac{2}{1 + \cos 2x} dx$$



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22. Evaluate:

$$\int \frac{2}{1 - \cos 2x} dx$$



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23. Evaluate:

$$\int \left(\sin^{-1}(\cos x) \right) dx$$



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24. Evaluate : $\int \cos^{-1}(\sin x) dx$.



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25. Integrate $\int \tan^{-1} \left(\frac{\sin 2x}{1 + \cos 2x} \right) dx$



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26. Evaluate:

$\int \cot^{-1} \left(\frac{\sin 2x}{1 - \cos 2x} \right) dx$



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27. Evaluate:

$$\int \frac{1 - \tan^2\left(\frac{x}{2}\right)}{1 + \tan^2\left(\frac{x}{2}\right)} dx$$



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28. Evaluate $\int \frac{\tan^{-1}x}{1+x^2} dx$



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29. Evaluate the following integrals:

$$\int \left(x + \frac{2}{x} \right) dx$$



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30. Evaluate the following integrals:

$$\int \left(4x^3 - 5x^{-6} \right) dx$$



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31. Find the following integrals: $\int \left(x^{\frac{2}{3}} + 1 \right) dx$



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32. Evaluate the following integrals:

$$\int (a^x + ax + x^a) dx, a > 0, a \neq 1$$



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33. Evaluate the following integrals:

$$\int (e^x + x^e + e^e) dx.$$



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34. Evaluate the following integrals:

$$\int \left(\frac{1}{x^2} + \sec^x + 5x \right) dx$$



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35. Evaluate the following integrals:

$$\int \frac{1}{1 - \cos 2x} dx$$



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36. Evaluate the following integrals:

$$\int (2x - 1)(x^2 + 1) dx$$



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37. Evaluate the following integrals:

$$\int \frac{3 + 5x - 7x^2}{\sqrt{7}} dx$$

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38. Evaluate the following integrals:

$$\int \left(\sqrt{x} + \frac{1}{\sqrt{x}} \right)^2 dx$$

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39. Evaluate the following integrals:

$$\int \left(x^{\frac{3}{2}} + 2e^x - \frac{1}{x} \right) dx$$



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40. Evaluate the following integrals:

$$\int \left(\sqrt{x} + \frac{1}{\sqrt{x}} \right)^3 dx$$



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41. Evaluate the following integrals:

$$\int \frac{x^4 - 1}{x} dx$$



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42. Evaluate the following integrals : $\int \frac{x^3 - x^2 + x - 1}{x - 1} dx$



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43. Evaluate the following integrals:

$$\int \frac{x^3 + 3x + 4}{\sqrt{x}} dx$$



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44. Evaluate the following integrals:

$$\int \frac{x^3 - 1}{x^2} dx$$



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45. Evaluate the following integrals : $\int \frac{1}{1 + \cos x} dx$



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46. Evaluate the following integrals:

$$\int \frac{1}{1 + \sec x} dx$$



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47. Evaluate the following integrals:

$$\int \frac{\sin^2 x}{1 + \cos x} dx$$



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48. Evaluate the following integrals:

$$\int \cot^2 x dx$$



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49. Evaluate the following integrals:

$$\int (\tan^2 x - 3x^2) dx$$



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50. Evaluate the following integrals:

$$\int \sqrt{1 - \sin 2x} dx, 0 < x < \frac{\pi}{4}$$



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51. Evaluate the following integrals:

$$\int (2\tan x - 3\cot x)^2 dx$$



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52. Evaluate the following integrals:

$$\int \left(\sqrt{x} - \frac{\cos x}{2} \right) dx$$



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53. Evaluate the following integrals:

$$\int \left(x^{\frac{3}{2}} - \sin\left(\frac{x}{2}\right) \cos\left(\frac{x}{2}\right) + 1 \right) dx$$



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54. Evaluate the following integrals:

$$\int \frac{\sin x}{1 + \sin x} dx$$



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55. Evaluate the following integrals:

$$\int \sec x (\sec x + \tan x) dx$$



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56. Evaluate the following integrals:

$$\int \operatorname{cosec}(x) (-\operatorname{cosec}(x)\cot(x)) dx$$



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57. Evaluate the following integrals:

$$\int \frac{\cos 2x}{\sin x \cos^2 x} dx$$

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58. Evaluate the following integrals:

$$\int \frac{1}{\sin^2 x \cos^2 x} dx$$

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59. Find the following integrals: $\int \frac{1 - \sin x}{\cos^2 x} dx$

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60. Evaluate the following integrals:

$$\int \frac{4 - 3\sin x}{\cos^2 x} dx$$



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61. Evaluate the following integrals:

$$\int \frac{\sin^3 x + \cos^3 x}{\sin^2 x \cos^2 x} dx$$



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62. Evaluate the following integrals: $\int \sqrt{ax + b} dx$



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63. Evaluate the following integrals:

$$\int (ax + b)^n dx, n \neq -1$$



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64. Evaluate the following integrals:

$$\int \sqrt{x + 1} dx$$



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65. Evaluate the following integrals:

$$\int (3 - 5x) dx$$



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66. Evaluate the following integrals:

$$\int \sqrt{e^x} dx.$$



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67. Evaluate the following integrals:

$$\int (e^x + e^{-x})^2 dx$$



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68. Evaluate the following integrals:

$$\int (e^{3\log x} + e^{3x\log a}) dx$$

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69. Evaluate the following integrals:

$$\int (a^x + b^x) dx.$$

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70. Evaluate the following integrals:

$$\int \frac{1}{\sqrt{a^2 - b^2 x^2}} dx$$

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71. Evaluate the following integrals:

$$\int \frac{1}{\sqrt{1+4x^2}} dx$$



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72. Evaluate the following integrals:

$$\int \frac{dx}{16-8x^2}$$



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73. Evaluate the following integrals:

$$\int \left(1 + \frac{1}{1+x^2} \right) dx, x > 1$$



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74. Evaluate the following integrals:

$$\int (16x^2 - 9)^{-\frac{1}{2}} dx$$



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75. Evaluate the following integrals : $\int \frac{dx}{x\sqrt{x^2 - 1}}$



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76. Evaluate the following integrals:

$$\int \frac{x^2}{9 + 4x^2} dx$$



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77. Evaluate the following integrals:

$$\int \frac{x^4 + 3}{x^2 + 1} dx$$



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78. Evaluate the following integrals:

$$\int \frac{1}{x^2 - 4x + 8} dx$$



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79. Evaluate the following integrals:

$$\int \frac{1}{\sqrt{7 - 6x - x^2}}$$



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80. Evaluate the following integrals:

$$\int (e^{\log x} + e^{-\log x}) dx$$



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81. Evaluate the following integrals:

$$\int \frac{e^{2\log x} - 1}{e^{2\log x} + 1} dx$$



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82. Evaluate the following integrals:

$$\int \frac{1 + \cos x}{1 - \cos x} dx$$



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83. Evaluate the following integrals:

$$\int \frac{\sin^2 x}{(1 + \cos)^2} dx$$



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84. Evaluate the following integrals : $\int \frac{1 + \sin x}{1 - \sin x} dx$

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85. Evaluate the following integrals:

$$\int \frac{\cos x - \cos 2x}{1 - \cos x} dx$$

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86. Evaluate the following integrals:

$$\int \frac{\sin x + \cos x}{\sqrt{1 + \sin 2x}} dx, 0 \leq x \leq \frac{\pi}{2}$$

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87. Evaluate the following integrals:

$$\int \frac{\cos x - \sin x}{\sqrt{1 - \sin 2x}} dx, 0 < x < \frac{\pi}{4}$$

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88. Evaluate the following integrals:

$$\int \tan^{-1}(\operatorname{cosec} x - \cot x) dx, -\pi < x < \pi$$

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89. Evaluate the following integrals:

$$\int \tan^{-1}(\operatorname{cosec}x + \cot x) dx, 0$$



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90. Evaluate the following integrals:

$$\int \sin x \sqrt{1 - \cos 2x} dx, -\pi < x < \pi$$



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91. Evaluate the following integrals:

$$\int \frac{dx}{\sqrt{a - bx^2}}, \text{ where } a, b > 0$$



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92. Evaluate the following integrals:

$$\int \left(\frac{\cot x}{\sin x} - \frac{\tan x}{\cos x} + \frac{2}{\cos^2 x} - \tan^2 x \right) dx$$



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93. Evaluate the following integrals:

$$\int \frac{1}{\sqrt{2x+3} - \sqrt{2x}} dx$$



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94. Evaluate the following integrals :

$$\int \frac{dx}{(\sqrt{x+a} + \sqrt{x+b})}$$

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95. Evaluate the following integrals :

$$\int \frac{1}{\sqrt{x} - x} dx$$

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96. Evaluate the following integrals:

$$\int \frac{x+1}{\sqrt{2x-1}} dx.$$

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97. Evaluate the following integrals:

$$\int x\sqrt{x+2} dx$$

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98. Evaluate the following integrals:

$$\int \frac{x^3}{2x+1} dx$$

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99. Evaluate the following integrals:

$$\int \frac{x^3}{1-x} dx$$



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100. Evaluate the following integrals:

$$\int \frac{x^n - 1}{x} dx, n \in N.$$



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101. Evaluate the following integrals:

$$\int \frac{x^6}{x-1} dx$$



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102. Evaluate the following integrals:

$$\int \cos^3 x dx.$$



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103. Evaluate the following integrals:

$$\int \sin^2 x \cos^2 x dx$$



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104. Evaluate the following integrals:

$$\int (\sin^4 x + \cos^4 x) dx.$$



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105. Evaluate the following integrals:

$$\int (\sin^6 x dx)$$



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106. Evaluate the following integrals:

$$\int \sin^4 x \cos^2 x dx.$$



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107. Evaluate the following integrals:

$$\int \cos^4 x \sin^2 x dx$$

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108. Evaluate the following integrals:

$$\int \sin^2 x dx$$

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109. Evaluate the following integrals:

$$\int \cos^4 2x dx$$

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110. Evaluate the following integrals:

$$\int \cos x \cos 2x \cos 3x dx$$

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111. Evaluate the following integrals:

$$\int \cos 2x \cos 4x \cos 6x dx.$$

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112. Evaluate $\int \sin m x \sin n x dx$, where m and n are positive integers. What happens if $m=n$?



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113. Differentiate the following functions w.r.t.x

$$\sin\left(2\tan^{-1}\sqrt{\frac{1-x}{1+x}}\right), -1 \leq x < 1$$



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114. Evaluate: $\int \cos\left(2\cot^{-1}\sqrt{\frac{1-x}{1+x}}\right) dx$



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115. $\int \frac{4x}{\sqrt{2x^2 + 3}} dx$



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116. $\int 2x(x^2 + 2)^{\frac{3}{2}} dx$



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117. Evaluate the following integral

$$\int (4x + 2)\sqrt{x^2 + x + 1} dx$$



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118. Evaluate the following integrals: $\int \frac{4x + 1}{\sqrt{2x^2 + x - 3}} dx$





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$$119. \int \frac{e^x}{\sqrt{a + be^x}} dx, b \neq 0$$



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120. Compute the following integrals:

$$\int \frac{dx}{x^2(x^4 + 1)^{3/4}}$$



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121. Evaluate the following integrals :

$$\int \frac{(x+1)(x+\log x)^2}{x} dx$$

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122. Evaluate $\int \frac{(1+\log x)^2}{x} dx$

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123. $\int \frac{2ax+b}{\sqrt{ax^2+bx+c}} dx$

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124. Compute the following integrals:

$$\int \frac{(\tan^{-1}x)^2}{1+x^2} dx$$

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125. Evaluate the following integrals:

$$\int \sin^2 x \cos^2 x dx$$

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126.
$$\int \frac{\sqrt{\tan^{-1}x}}{1+x^2} dx$$

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$$127. \int \cos^3(ax + b)\sin(ax + b)dx$$

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$$128. \int \sec^3x \tan x dx$$

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$$129. \int \cot^3x \operatorname{cosec}^2x dx$$

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130. $\int \sqrt{\tan x} (1 + \tan^2 x) dx$



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131. Compute the following integrals:

$$\int \frac{\cos x}{\sqrt{1 + \sin x}} dx$$



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132. Compute the following integrals:

$$\int \frac{\sin^{-1} x}{\sqrt{1 - x^2}} dx$$



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133. Compute the following integrals:

$$\int \frac{\sin x}{(1 + \cos x)^2} dx$$

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134.
$$\int \frac{3\tan^2 x + 2\sec^2 x}{(\tan^3 x + 2\tan x + 9)^2} dx$$

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135.
$$\int (e^{3x} + 1)^2 e^{3x} dx$$

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136. Integrate the following functions : $\int \frac{e^x}{e^{2x} + 1} dx$

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137. Evaluate : $\int \frac{x - 1}{\sqrt{x^2 + 1}} dx.$

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138. Evaluate $\int \frac{x - 2}{\sqrt{x^2 + 1}} dx$

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139. Evaluate : $\int \sqrt{\frac{1-x}{1+x}} dx$.



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140. Evaluate $\int \sqrt{\frac{a-x}{a+x}} dx$



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141. Integrate the following functions : $\int \sqrt{\frac{a-x}{a+x}} dx$



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$$142. \int \frac{\sqrt{a^2 - x^2}}{x^2} dx$$

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143. Compute the following integrals:

$$\int \frac{\cos x - \sin x}{\cos x + \sin x} dx$$

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144. Evaluate the following integrals : $\int \frac{2\cos x - 3\sin x}{6\cos x + 4\sin x}$

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145. Evaluate $\int \frac{1}{1 + \cot x} dx$.

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146. Find the following integrals

$$\int \frac{1}{1 - \tan x} dx$$

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147. $\int \frac{\sin 2x - \sin x}{\sin^2 x + \cos x + 3} dx$

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148. $\int \frac{1}{x \log x} dx$

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149. Evaluate the following integrals : $\int \frac{x^{e-1} + e^{x-1}}{x^e + e^x} dx$

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150. Compute the following integrals:

$$\int \frac{1 + \tan x}{x + \log \sec x} dx$$

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151. Evaluate the following integrals : $\int \frac{e^{2x} + 1}{e^{2x} - 1} dx$

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152. Evaluate the following integrals: $\int \frac{1}{e^x - 1} dx$

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153. Compute the following integrals:

$$\int \frac{1 + \cot x}{x + \log \sin x} dx$$

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$$154. \int \frac{x - 1}{x(x - \log x)} dx$$



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$$155. \int \frac{2x^2 - 1}{x} (x^2 - \log x) dx$$



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$$156. \int \frac{\cot x}{\log(\sin x)} dx$$



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157. Compute the following integrals:

$$\int \frac{\sec x}{\log(\sec x + \tan x)} dx$$

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158. Evaluate the following integrals : $\int \tan^4 x dx$

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159. Evaluate the following integrals : $\int \sec^4 x dx$

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160. Evaluate the following integrals : $\int \operatorname{cosec}^4 x dx$



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161. Evaluate: $\int \tan^8 x \sec^4 x dx$



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162. $\int \cot(5 - 7x) dx$



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163. Write the following functions in the simplest form:

$$\tan^{-1} \left(\left(\frac{\sqrt{1 - \cos x}}{1 + \cos x} \right) \right), 0 < x < \pi$$



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164. $\int \frac{\sin 2x + 2\cos^2 x}{\sin^2 x} dx$



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165. Evaluate the following integration

$$\int \cos^3 x dx$$



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166. Evaluate : $\int \frac{\cos x}{\cos(x + a)} dx.$

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167. Evaluate : $\int \frac{\cos x}{\cos(x - a)} dx.$

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168. Find the following integral: $\int \frac{\sin x}{\sin(x + a)} dx$

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$$169. \int \frac{1}{\sin x \cos x} dx$$



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$$170. \int \frac{\cos 2x}{\cos x} dx$$



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171. Compute the following integrals:

$$\int \frac{\sin 2x}{\sin 4x} dx$$



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172. Evaluate $\int \frac{dx}{1 + \cos x}$



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173. $\int \frac{dx}{\sqrt{1 - \cos x}}, 0 < x < \pi$



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174. Integrate the following functions :

$$\int \frac{1}{\sin(x - a)\sin(x - b)} dx$$



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175. $\int \frac{dx}{\cos x + \cos \alpha}$

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176. Evaluate $\int \frac{1}{\cos(x - a)\cos(x - b)} dx$

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177. Evaluate the following integrals:

$$\int \sqrt{1 + \sin x} dx, \left(-\frac{\pi}{2} \leq x \leq \frac{3\pi}{2} \right).$$

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178. Integrate $\int \frac{dx}{\sqrt{1 - \sin x}}$

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179. $\int \frac{dx}{\sin x + \cos x}$

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180. $\int \frac{dx}{\sin x - \cos x}$

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181. Evaluate the following integrals : $\int \frac{\cos x - \sin x}{1 + \sin 2x}$



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182. Evaluate the following integrals : $\int \frac{\cos x - \sin x}{1 + \sin 2x}$



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183. Evaluate:

$$\int_0^{\pi/2} \frac{dx}{2\cos x + 4\sin x}$$



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184. $\int \frac{dx}{(2\sin x - 3\cos x)^2}$





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$$185. \int \frac{1}{\sec x + \operatorname{cosec} x} dx$$



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$$186. \int \frac{1}{1 + \sqrt{x}} dx$$



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$$187. \int \frac{1}{x + 3\sqrt{x}} dx$$



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188. Evaluate $\int \sqrt{x} \left(1 + x^{1/3}\right)^4 dx$.



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189. Evaluate $\int \frac{x}{\sqrt{x-1}} dx$



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190. $\int \frac{x^2}{(4+x)^2} dx$



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191. Evaluate the following integrals:

$$\int x^2 \sin x dx$$



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192. Integrate the function: $\sin x \sin(\cos x)$



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193. Evaluate the following integrals:

$$\int \frac{2^x}{\sqrt{1 - 4^x}} dx$$



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194. Evaluate the following integrals : $\int e^x \operatorname{cosec}^2(e^x) dx$



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195. Compute the following integrals:

$$\int \frac{\sin(\log x)}{x} dx$$



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196. $\int \frac{\sec^2(\log x)}{x} dx$



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197. Integrate the function: $\frac{\cos\sqrt{x}}{\sqrt{x}}$

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198. $\int x(3^{x^2})dx$

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199. Compute the following integrals:

$$\int \frac{e^{\tan^{-1}x}}{1+x^2} dx$$

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200. Compute the following integrals:

$$\int \frac{x}{e^{x^2}} dx$$



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201. $\int e^x \left(\frac{1}{x} - \frac{1}{x^2} \right) dx$ is equal to :



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202. Integrate

$$\int e^{-x} \operatorname{cosec}^2(2e^{-x} + 5) dx$$



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203. $\int x^2 e^{x^3} dx$ equals :



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204. Evaluate : $\int \frac{e^x(1+x)}{\cos^2(xe^x)} dx.$



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205. $\int \left(\frac{\tan\left(\frac{1}{x}\right)}{x} \right)^2 dx$



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206. $\int 2x \sin(x^2 + 1) dx$

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207. Evaluate the following integrals : $\int \frac{x^2}{\sin^2 x^3} dx$

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208. Compute the following integrals:

$$\int 2x \sec^3(x^2 + 3) \tan(x^2 + 3) dx$$

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209. $\int \frac{x^2}{\sqrt{1-x^6}} dx$



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210. Evaluate the following integrals:

$$\int \frac{x^2}{\sqrt{x^6 - a^6}} dx$$



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211. Integrate the functions: $\frac{x^2}{\sqrt{x^6 + a^6}}$



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212. Find: $\int \frac{\sqrt{x}}{\sqrt{a^3 - x^3}}$

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213. Evaluate the following integrals : $\int \frac{dx}{x\sqrt{x^2 - 1}}$

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214. Evaluate the following integrals:

$$\int \frac{3x}{1 + 2x^4} dx$$

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215. $\int \frac{x^7}{x^4 + 1} dx$



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216. $\int \frac{x^5}{1 + x^{12}} dx$



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217. Integrate $\int \frac{ax^3}{x^4 + c^2} dx$



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218. Integrate the following functions : $\int \frac{e^x}{e^{2x} + 1} dx$

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219. $\int \frac{x + \sqrt{x+1}}{x+2} dx$

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220. Integrate the following functions : $\int \sqrt{e^x - 1} dx$

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221. Integrate : $\int \frac{\tan^5 \sqrt{x} \sec^3 \sqrt{x}}{\sqrt{x}} dx$

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222. Integrate the function

$$\frac{x^3 \sin(\tan^{-1} x^4)}{1 + x^8}$$

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223. Evaluate the following integrals : $\int \frac{x \sin^{-1} x}{\sqrt{1-x^2}} dx$

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224. $\int \frac{1}{x \cos^2(1 + \log x)} dx$

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225. Evaluate the following integrals:

$$\int (e^x + e^{-x})^2 dx$$

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226. Integrate: $\int \frac{x^3}{\sqrt{1 - x^8}} dx$

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227. Integrate the function: $(x^3 - 1)^{\frac{1}{3}} x^5$

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228. Evaluate: $\int \sqrt{\frac{1-x}{1+x}} dx.$

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229. Evaluate $\int \frac{1}{\sin^2 x + 4\cos^2 x} dx$

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230. Evaluate $\int \frac{1}{4\sin^2x + 5\cos^2x} dx$

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231. Evaluate the following integrals:

$$\int \frac{dx}{1 + 3\sin^2x + 8\cos^2x}$$

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232. $\int \frac{1}{\sin x \cos x + 2\cos^2x} dx$

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233. Evaluate the following integration

$$\int \cos^3 x dx$$



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234. Find the following integrals : $\int \sin^3(2x + 1) dx$



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235. Evaluate the following integrals:

$$\int \sin^3 x \cos^2 x dx$$



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236. Evaluate the following integrals : $\int \cos^3 x \sin^4 dx$



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237. Evaluate the following integrals:

$$\int \sin^2 x \cos^3 x dx$$



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238. Evaluate the following integrals:

$$\int \frac{\cos x}{\sqrt{4 - \sin^2 x}} dx$$



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239. Evaluate $\int \frac{\sin x \cos^3 x}{1 + \cos^2 x} dx$

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240. Compute the following integrals:

$$\int \frac{\sin 2x}{(a + b \cos x)^2} dx$$

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241. Evaluate : $\int \frac{\sin x + \cos x}{\sqrt{\sin 2x}} dx.$

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242. Find the following integrals:

$$\int \operatorname{cosec}x(\operatorname{cosec}x + \cot x)dx$$



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243. Evaluate : $\int \frac{\sin x - \cos x}{\sqrt{\sin 2x}} dx.$



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244. Compute the following integrals:

$$\int \frac{\cos x - \sin x}{\sqrt{1 + \sin 2x}} dx$$



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245. $\int \frac{\sec^2 x}{16 + \tan^2 x} dx$

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246. Evaluate the following integrals:

$$\int \frac{\tan x}{\sec x + \cos x} dx$$

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247. Evaluate $\int_0^{\pi/2} \frac{4\sin x + \cos x}{\sin x + \cos x} dx$

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248. Evaluate: $\int \frac{\sqrt{1 + \cos x}}{(1 - \cos x)^{5/2}} dx$



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249. $\int \cos^5 x dx$



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250. $\int \sin^7 x dx$



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251. Evaluate the following integrals : $\int \operatorname{cosec}^4 x dx$



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252. $\int \sec^4(3x + 2) dx$



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253. $\int \frac{\sqrt{a} - \sqrt{x}}{1 - \sqrt{ax}} dx, a, x > 0$



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254. Find: $\int \frac{\sin 2x \cos 2x}{\sqrt{9 - \cos^4(2x)}} dx$

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255. $\int x \sin 2x dx$

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256. $\int (2 + 3x) \cos 6x dx$

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257. $\int \sec^3 x \tan x dx$



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258. Evaluate the following integrals:

$$\int \sin 5x \sin 3x dx$$



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259. $\int x \sec^2 x dx$



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$$260. \int x \sin\left(\frac{x}{4}\right) \cos\left(\frac{x}{4}\right) \cos\left(\frac{x}{2}\right) dx$$



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$$261. \int x \sin\left(\frac{x}{2}\right) \cos\left(\frac{x}{2}\right) \cos x dx$$



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$$262. \int x \tan^2 x dx$$



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263. $\int x \log x dx$



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264. $\int (e^{\log x} + \sin x) \cos x dx$



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265. Evaluate the following integrals:

$$\int_0^{\pi} \frac{x}{1 + \sin x} dx$$



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266. $\int \frac{x}{1 - \sin x} dx$

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267. Evaluate $\int x^2 \log x dx$.

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268. Evaluate the following integrals:

$$\int x^3 \log x dx$$

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269. $\int x^{3/2} \log x dx$



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270. Evaluate the following integrals:

$$\int \frac{\log(x+2)}{(x+2)^2} dx$$



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271. Compute the following integrals:

$$\int \frac{\log x}{x} dx$$



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272. Evaluate the following integrals:

$$\int \cos 2x \log \sin x dx$$



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273. Evaluate $\int x \tan^{-1} x dx$



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274. $\int x^3 \tan^{-1} x dx$



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275. $\int x^2 \log(1 + x) dx$



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276. Evaluate the following integrals:

$$\int x^2 \tan^{-1} x dx$$



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277. Evaluate the following integrals:

$$\int \sin^{-1} x dx$$



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278. $\int \cos^{-1}\left(\frac{1}{x}\right), x > 1 dx$



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279. Evaluate the following integrals : $\int \frac{\sin^{-1}x}{x^2} dx$



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280. $\int \tan^{-1}(\sqrt{x}) dx$



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281. Compute the following integrals:

$$\int \frac{\sin^{-1}x}{\sqrt{1-x^2}} dx$$



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282. Evaluate the following integrals:

$$\int \frac{x \cos^{-1}x}{\sqrt{1-x^2}} dx$$



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283. $\int \cos\sqrt{x} dx$



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$$284. \int x^3 \sqrt{x^2 + 3} dx$$



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$$285. \int x^2 e^{x^3} dx \text{ equals :}$$



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$$286. \int e^{\sqrt{x}} dx$$



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287. Evaluate the following integrals:

$$\int x^{2n-1} \sin x^n dx$$



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288. $\int e^{\sin x} \sin 2x dx.$



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289. Evaluate the following integrals:

$$\int x^2 \sin^{-1} x dx$$



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290. Evaluate the following integrals:

$$\int x^2 e^{3x} dx$$



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291. $\int x^2 e^{-2x} dx$



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292. Evaluate the following integrals:

$$\int x(\log x)^2 dx$$



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293. Evaluate $\int x^2 \sin x dx$



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294. $\int x^2 \cos x dx.$



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295. $\int (\log x)^2 dx$



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296. $\int x^5 \cos x^3 dx$



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297. $\int x^2 \tan x^3 dx$



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298. $\int x^3 \tan^{-1} x^2 dx$



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299. Find $\frac{dy}{dx}$ when: $y = \tan^{-1} \left(\frac{2x}{1-x^2} \right)$



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$$300. \int \sin^{-1}(3x - 4x^3) dx$$

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301. Evaluate the following integrals:

$$\int \tan^{-1}\left(\frac{3x - x^3}{1 - 3x^2}\right) dx$$

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302. Evaluate the following integrals:

$$\int \tan^{-1}\sqrt{\frac{1-x}{1+x}} dx$$

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$$303. \int \frac{x(\sin^{-1}x)}{\sqrt{1-x^2}} dx$$

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$$304. \int \frac{x \sin^{-1}x}{(1-x^2)^{3/2}} dx$$

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$$305. \int \frac{\sin^{-1}x}{(1-x^2)^{3/2}} dx$$



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306. Evaluate the following integrals:

$$\int \frac{x^2 \tan^{-1} x}{1+x^2} dx$$



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307. Evaluate : $\int \sin^{-1} \left(\sqrt{\frac{x}{a+x}} \right) dx$



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308. Find: $\int \frac{x \sin^{-1} x}{\sqrt{1-x^2}} dx$



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309. Find: $\int e^x \sin x dx$



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310. Evaluate the following integrals: $\int e^x \cos x dx$



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311. Evaluate the following integrals:

$$\int e^{ax} \cos b x dx$$



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312. Evaluate the following integrals:

$$\int e^{2x} \sin x dx$$



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313. Evaluate the following integrals:

$$\int e^{ax} \cos b x dx$$



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314. $\int e^{-3x} \cos^3 x dx$



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315. Evaluate $\int \frac{e^{\tan^{-1}x}}{1+x^2} dx$

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316. Evaluate $\int \frac{e^{\tan^{-1}x}}{1+x^2} dx$

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317. Evaluate : $\int \operatorname{cosec}^3 x dx$.

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318. $\int \frac{(a + \sqrt{x})^n}{\sqrt{x}} dx, n \neq -1$

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319. Evaluate the following integrals:

$$\int \cos(\log x) dx$$

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320. We know that x^3 is the integral of $3x^2$

Taking $3x^2$ as $3x \times x$, verify that the integration by parts gives the same answer.

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321. Taking $\sin x$ as $\sin x \cdot 1$, integrate by parts, Use this to find $\int x \cos x dx$



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322. Find the following integrals

$$\int e^x (\sin x + \cos x) dx$$



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323. Evaluate the following integrals:

$$\int e^x (\cot x - \operatorname{cosec}^2 x) dx$$



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324. Evaluate the following integrals:

$$\int e^x \left(\frac{1}{x} - \frac{1}{x^2} \right) dx$$



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325. Evaluate the following integrals:

$$\int \frac{xe^x}{(1+x)^2} dx$$



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326. Evaluate the following integrals:

$$\int e^x \left(\frac{1}{x^2} - \frac{2}{x^3} \right) dx$$



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327. Evaluate the following integrals:

$$\int e^{2x} \left(\frac{2x - 1}{4x^2} \right) dx$$



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328. Evaluate the following integrals:

$$\int \frac{1-x}{\left(1+x^2\right)^2} e^x dx$$



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329. Evaluate the following integrals: $\int e^x \left(\frac{1 - \sin x}{1 - \cos x} \right) dx$



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330. Evaluate the following integrals:

$$\int \left(\frac{2 + \sin 2x}{1 + \cos 2x} \right) e^x dx$$



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331. Evaluate the following integrals:

$$\int \left(\frac{x - \sin x}{1 - \cos x} \right) dx.$$



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332. Evaluate the following integrals:

$$\int \frac{(x - 1)e^x}{(x + 1)^3} dx$$



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333. Evaluate the following integrals:

$$\int \frac{(x - 3)e^x}{(x - 1)^3} dx$$



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334. Evaluate the following integrals:

$$\int \frac{(x + 3)e^x}{((x + 5))^3} dx$$



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335. Evaluate the following integrals: $\int e^x \left(\frac{x^2 + 1}{(x + 1)^2} \right)$



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336. Evaluate the following integrals:

$$\int e^x (\tan x + \sec^2 x) dx$$

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337. Evaluate the following integrals:

$$\int e^{-3x} (\cos x - 3 \sin x) dx$$

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338. Evaluate the following integrals:

$$\int \sqrt{16 - x^2} dx$$



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339. Evaluate the following integrals:

$$\int \sqrt{1 - 4x^2} dx$$



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340. Evaluate the following integrals:

$$\int \sqrt{1 + x^2} dx$$



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341. Evaluate the following integrals:

$$\int \frac{x^2}{\sqrt{x^2 + 1}} dx$$



[Watch Video Solution](#)

342. Evaluate the following integrals : $\int (1 - x)\sqrt{x} dx$



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343. Evaluate the following integrals:

$$\int \sqrt{\frac{1-x}{x+1}} dx$$



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344. Evaluate the following integrals:

$$\int \sqrt{2x^2 + 3x + 9} dx$$



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345. Evaluate the following integrals:

$$\int \sqrt{x^2 + 4x + 6} dx$$



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346. Evaluate the following integrals: $\int \sqrt{x^2 + 2x + 5} dx$



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347. Evaluate the following integrals: $\int \sqrt{x^2 + 2x + 5} dx$

 [Watch Video Solution](#)

348. Evaluate the following integrals:

$$\int \sqrt{1 - 4x - x^2} dx$$

 [Watch Video Solution](#)

349. Evaluate the following integrals:

$$\int \frac{dx}{\sqrt{x}\sqrt{5-x}}$$

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350. Evaluate the following integrals:

$$\int \frac{1}{\sqrt{2x - x^2}} dx$$



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351. Evaluate the following integrals:

$$\int (x - 1)\sqrt{1 + x + x^2} dx$$



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352. Evaluate the following integrals:

$$\int (x - 1)\sqrt{x^2 + x + 1} dx$$



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353. Evaluate the following integrals:

$$\int (x - 3)\sqrt{x^2 + 3x - 18} dx$$



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354. Evaluate the following integrals : $\int x\sqrt{x^2 - 1} dx$



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355. Evaluate the following integrals:

$$\int \frac{\sqrt{x+1} - \sqrt{x-1}}{\sqrt{x+1} + \sqrt{x-1}} dx$$



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356. Evaluate the following integrals:

$$\int x \cos^{-1} x dx$$



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357. Evaluate the following:

$$\int \frac{1}{9x^2 - 1} dx$$



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358. Evaluate the following:

$$\int \frac{1}{a^2 - b^2 x^2} dx.$$



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359. Evaluate the following integrals: $\int \frac{x^3 + x + 1}{x^2 - 1} dx$



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360. Evaluate the following:

$$\int \frac{x^2}{1 + x^6} dx$$

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361. Evaluate the following:

$$\int \frac{\sin x}{16 - 9\cos^2 x}$$

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362. Evaluate the following:

$$\int \frac{1}{4 - 5\cos^2 x} dx.$$

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363. Evaluate the following integrals:

$$\int \frac{1}{x^2 + 2x + 2} dx$$



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364. Evaluate the following:

$$\int \frac{1}{9x^2 + 6x + 1} dx$$



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365. Evaluate the following:

$$\int \frac{1}{x^2 - 6x + 13} dx.$$



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366. Evaluate the following integrals: $\int \frac{1}{(x+1)(x+2)} dx$



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367. Evaluate the following:

$$\int \frac{1}{1+x-x^2} dx.$$



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368. Evaluate the following:

$$\int \frac{1}{x^2 + 8x + 20} dx.$$



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369. Evaluate the following:

$$\int \frac{1}{1 - 3\sin^2 x} dx.$$



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370. Evaluate the following:

$$\int \frac{1}{e^x - e^{-x}} dx.$$



Watch Video Solution

371. Evaluate the following:

$$\int \frac{x^3 + x}{x^4 - 9} dx.$$



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372. Evaluate the following integrals:

$$\int \frac{\cos x}{\cos 3x} dx$$



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373. Evaluate the following:

$$\int \frac{x}{x^2 + 4x + 5} dx.$$



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374. Evaluate the following:

$$\int \frac{x + 3}{x^2 + 2x + 2} dx$$



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375. Evaluate the following integrals:

$$\int \frac{x^2}{x^2 + 6x - 12} dx$$



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376. Evaluate the following integrals:

$$\int \frac{x^2 + x + 1}{(x + 2)(x^2 + 1)} dx$$



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377. Evaluate the following :

$$\int \frac{x}{(x^2 + 1)(x - 1)} dx$$



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378. Evaluate the following:

$$\int \frac{4x^2 + 3}{8x^2 + 12x + 5} dx$$



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379. Evaluate the following:

$$\int x \tan^{-1}(2x + 3) dx.$$



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380.
$$\int \frac{1}{\sec x + \operatorname{cosec} x} dx$$



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381. Evaluate the following:

$$\int \frac{1}{\sec x + \tan x} dx.$$



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382. Evaluate the following integrals:

$$\int \frac{2x + 1}{(x + 1)(x + 2)} dx$$



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383. Evaluate the following integrals:

$$\int \frac{x + 1}{x^2 + 4x - 5} dx$$



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384. Evaluate the following integrals:

$$\int \frac{x - 1}{(x + 1)(x - 2)} dx$$



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385. Evaluate the following integrals:

$$\int \frac{dx}{x(x - 2)(x - 4)}$$



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386. Evaluate the following integrals:

$$\int \frac{x^2}{(x - 1)(x - 2)(x - 3)} dx$$



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387. Evaluate the following integrals:

$$\int \frac{2x - 1}{(x - 1)(x + 2)(x - 3)}$$



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388. Evaluate the following integrals:

$$\int \frac{x^2 + 2x + 8}{(x - 1)(x - 2)} dx$$



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389. Evaluate the following integrals:

$$\int \frac{x^3}{(x-1)(x-2)} dx.$$



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390. Evaluate the following integrals: $\int \frac{3x-2}{(x+2)^2} dx$



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391. Evaluate the following integrals: $\int \frac{x^3 + x + 1}{x^2 - 1} dx$



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392. Evaluate the following integrals:

$$\int \frac{x^2 + x + 1}{(x + 2)(x^2 + 1)} dx$$



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393. Evaluate the following integrals:

$$\int \frac{x^4 + 1}{x^2 + 1} dx$$



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394. Evaluate the following integrals: $\int \frac{3x - 2}{(x + 1)(x + 3)} dx$



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395. Evaluate the following integrals:

$$\int \frac{x^2 + 1}{(x - 1)^2(x + 3)} dx$$



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396. Evaluate the following integrals: $\int \frac{1}{e^x - 1} dx$



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397. Evaluate the following integrals: $\int \frac{1}{x(x^4 + 1)} dx$



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398. Evaluate the following integrals: $\int \frac{1}{e^x - 1} dx$



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399. Evaluate the following integrals: $\int \frac{1}{x(x^4 + 1)} dx$



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400. Evaluate the following integrals:

$$\int \frac{1}{x - x^3} dx$$



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401. Evaluate the following integrals:

$$\int \frac{\cos x}{(1 + \sin x)(2 + \sin x)} dx$$

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402. Evaluate the following integrals:

$$\int \frac{\cos \theta}{(2 + \sin \theta)(3 + 4 \sin \theta)} d\theta$$

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403. Evaluate the following integrals: $\int \frac{2x}{(x^2 + 1)(x^2)} dx$

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404. Evaluate the following integrals:

$$\int \frac{1}{x^3 + 1} dx$$



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405. Evaluate the following integrals:

$$\int \frac{1}{1 + x + x^2 + x^3} dx$$



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406. Evaluate the following integrals:

$$\int \frac{2x}{x^3 - 1} dx$$



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407. Evaluate the following integrals:

$$\int \frac{1}{(e^x + 1)^2} dx$$

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408. Evaluate the following integrals:

$$\int \frac{1}{x(1 + 4x^3 + 3x^6)} dx$$

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409. Evaluate the following Integrals :

$$\int \frac{\tan^{-1}}{x^2} \cdot dx$$



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410. Evaluate the following integrals:

$$\int \frac{2}{(1-x)(1+x^2)} dx$$



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411. Evaluate the following integrals:

$$\int \frac{x}{1+x+x^2+x^3} dx$$



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412. Evaluate the following integrals:

$$\int \frac{x + 1}{(x - 1)^2(x + 2)^2} dx$$

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413. Evaluate the following integrals:

$$\int \frac{5}{(x + 2)(x^2 + 1)} dx$$

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414. Evaluate the following integrals:

$$\int \frac{1}{\sin x(3 + 2\cos x)} dx$$

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415.
$$\int \frac{1}{\sec x + \operatorname{cosec} x} dx$$

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416. Evaluate the following integrals:

$$\int \frac{1}{\sin x(1 + 2\cos x)} dx$$

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417. Evaluate the following integrals:

$$\int \frac{1}{\left(x(x^2 + 1)\right)^2} dx$$



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418. Evaluate the following integrals:

$$\int \frac{1}{x \left[6(\log x)^2 + 7\log x + 2\right]} dx$$



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419. Evaluate the following integrals:

$$\int \frac{\tan x + \tan^3 x}{1 + \tan^3 x} dx$$



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420. Evaluate the following integrals:

$$\int \frac{\cot x + \cot^3 x}{1 + \cot^3 x} dx$$



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421. Evaluate the following integrals: $\int \frac{x^2 + 1}{x^4 + x^2 + 1} dx$



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422. Evaluate the following integrals: $\int \frac{(x^2 - 1) dx}{x^3}$



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423. Evaluate the following integrals:

$$\int \frac{x^4 + x^3 - 6x^2 - 13x - 6}{x^2 - 7x + 6} dx.$$



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424. Evaluate the following integrals:

$$\int \frac{\sin 4x}{\sin x} dx$$



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425. Evaluate the following integrals:

$$\int \frac{\sqrt{\cos 2x}}{\cos x} dx$$



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426. Evaluate the following integrals:

$$\int \frac{x^2}{(x^2 + 1)(2x^2 + 1)} dx$$



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427. Evaluate the following integrals:

$$\int \frac{2x^2 + 1}{x^2(x^2 + 4)} dx$$



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428. Evaluate the following integrals:

$$\int \frac{(x^2 + 1)(x^2 + 2)}{(x^2 + 3)(x^2 + 4)} dx$$



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429. Evaluate the following integrals:

$$\int \frac{(1 + 2x)^2}{x^2(1 + x^2)} dx$$



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430. Evaluate the following integrals:

$$\int \frac{x^2}{(x^2 + a^2)(x^2 + b^2)} dx$$



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431. Evaluate the following integrals:

$$\int \frac{xdx}{x^4 + 3x^2 - 4}$$



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432. Evaluate the following integrals:

$$\int \frac{x^4}{x^4 - 1} dx$$



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433. Evaluate the following integrals:

$$\int \frac{x^2}{x^4 - x^2 - 12} dx$$



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434. Evaluate the following integrals : $\int \frac{x^2 - 1}{x^4 + 1} dx$

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435. Evaluate the following integrals: $\int \frac{x^2 + 1}{x^4 + x^2 + 1} dx$

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436. Evaluate the following integrals: $\int \frac{x^2 - 1}{x^4 + x^2 + 1} dx$

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437. Evaluate the following integrals:

$$\int \frac{x^2 - 3}{x^2 + 9} dx$$



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438. Evaluate the following integrals: $\int \frac{x^2 + 4}{x^4 + 16} dx$



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439. Evaluate the following integrals: $\int \frac{1}{x^4 + 1} dx$



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440. Evaluate the following integrals:

$$\int \frac{x^2}{x^3 + 9} dx$$



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441. Evaluate the following integrals:

$$\int \frac{1}{1 + x^2 + x^4} dx$$



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442. Evaluate the following integrals:

$$\int \frac{x^2 - 3x + 1}{x^4 - x^2 + 1} dx$$



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443. Evaluate the following integrals : $\int \sqrt{\cot x} dx$



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444. Evaluate the following integrals:

$$\int \frac{x^4 + 1}{x^6 + 1} dx$$



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445. Evaluate the following integrals:

$$\int \frac{1}{2 + 2\cos x} dx$$



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446. Evaluate the following integrals:

$$\int \frac{1}{5 + 5\cos x} dx$$



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447. Evaluate the following integrals:

$$\int \frac{1}{5 - 4\cos x} dx$$



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448. Evaluate the following integrals :

$$\int \frac{dx}{1 - \sin x + \cos x}$$



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449. Evaluate the following integrals:

$$\int \frac{1}{4 + 5\sin x} dx$$



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450. Evaluate the following integrals:

$$\int \frac{1}{4 + 5\sin x} dx$$



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451. Evaluate the following integrals :

$$\int \frac{dx}{1 - \sin x + \cos x}$$



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452. Evaluate the following integrals: $\int \frac{dx}{2\sin x + \cos x + 3}$



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453. Evaluate the following integrals:

$$\int \frac{dx}{1 + \cot x}$$



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454. Evaluate the following integrals:

$$\int \frac{dx}{1 - \tan x}$$

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455. Evaluate the following integrals:

$$\int \frac{dx}{1 - \cot x}$$

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456. Evaluate the following integrals: $\int \frac{1}{a + b \tan x} dx$

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457. Evaluate the following integrals: $\int \frac{2\sin x + 3\cos x}{3\sin x + 4\cos x} dx$

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458. Evaluate the following integrals:

$$\int \frac{\cos x}{1 + \sin x + \cos x}$$

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459. Evaluate the following integrals:

$$\int \cos 2x \log(1 + \tan x) dx$$

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460. Evaluate the following integrals:

$$\int \frac{1}{a + b \sin x} dx, a, b > 0, a \neq b$$



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461. Evaluate the following integrals:

$$\int \frac{1}{a + b \cos x} dx, a, b > 0$$



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462. Evaluate the following integrals:

$$\int \frac{dx}{\sqrt{x - x^2}}$$



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463. Evaluate the following integrals : $\int \frac{dx}{\sqrt{2x - x^2}}$



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464. Evaluate the following integrals:

$$\int \frac{dx}{\sqrt{4 + 2x - x^2}}$$



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465. Evaluate the following integrals:

$$\int \frac{dx}{\sqrt{7 - 3x - 2x^2}}$$



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466. Evaluate the following integrals: $\int \frac{dx}{\sqrt{16 - 6x - x^2}}$



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467. Evaluate the following integrals:

$$\int \frac{dx}{\sqrt{x + 1}}$$



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468. Evaluate the following integrals: $\int \frac{dx}{\sqrt{7 - 6x - x^2}}$

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469. Evaluate the following integrals: $\int \frac{dx}{\sqrt{x(1 - 2x)}}$

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470. Evaluate the following integrals:

$$\int \frac{x}{\sqrt{8 + x - x^2}} dx$$

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471. Evaluate the following integrals: $\int \frac{x}{\sqrt{x^2 + x + 1}} dx$

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472. Evaluate the following integrals: $\int \frac{x + 2}{\sqrt{x^2 + 2x + 3}} dx$

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473. Evaluate the following integrals:

$$\int \frac{2x + 3}{\sqrt{x^2 + 4x + 5}} dx$$

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474. Evaluate the following integrals:

$$\int \frac{x + 2}{\sqrt{(x - 2)(x - 3)}} dx$$



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475. Evaluate the following integrals:

$$\int \frac{2x + 1}{\sqrt{x^2 + 4x + 3}} dx$$



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476. Evaluate the following integrals:

$$\int \frac{2x + 5}{\sqrt{7 - 6x - x^2}} dx$$



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477. Evaluate the following integrals:

$$\int \sqrt{\frac{a+x}{x}} dx$$



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478. Evaluate the following integrals:

$$\int \frac{2x + a}{\sqrt{x^2 + ax}} dx$$



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479. Evaluate the following integrals:

$$\int \frac{1}{\sqrt{x^2 + 2x + 2}} dx$$



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480. Evaluate the following integrals:

$$\int \frac{x^2 + 2x + 3}{\sqrt{x^2 + x + 1}} dx$$



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481. Evaluate the following integrals: $\int \frac{dx}{\sqrt{(x-a)(x-b)}}$

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482. Evaluate the following integrals:

$$\int \frac{e^x}{\sqrt{5 - 4e^x - e^{2x}}} dx, x < 0$$

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483. Evaluate the following integrals:

$$\int \frac{x}{\sqrt{x^4 - x^2 + 1}} dx$$

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484. Evaluate the following integrals:

$$\int \frac{dx}{(1 - 2x^2)\sqrt{1 - x^2}}$$



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485. Evaluate the following integrals:

$$\int \frac{\sqrt{a^2 - x^2}}{x^2} dx, a > 0$$



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486. Evaluate the following integrals:

$$\int \frac{x^3}{(1-x^2)^{3/2}} dx$$



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487. Evaluate the following integrals : $\int \frac{dx}{x\sqrt{x^2-1}}$



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488. Evaluate the following integrals:

$$\int x^3 \sqrt{x^2-1} dx$$



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489. Evaluate the following integrals:

$$\int \frac{dx}{(x^2 + 1)^{3/2}}.$$



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490. Evaluate the following integrals: $\int \frac{x + 2}{\sqrt{x^2 + 2x + 3}} dx$



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491. Evaluate the following integrals:

$$\int \frac{dx}{(x^2 + 4)^{3/2}}.$$



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492. Evaluate the following integrals:

$$\int \frac{dx}{(2 + 4x)^{3/2}}$$



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493. Evaluate the following integrals:

$$\int \cos x \frac{dx}{(4 - \sin x)^{3/2}}.$$





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494. Evaluate the following integrals:

$$\int \frac{1}{(2 + x^2)^{5/2}} dx.$$



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495. Evaluate the following integrals:

$$\int \frac{dx}{(x - 3)\sqrt{x + 1}}$$



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496. Evaluate the following integrals:

$$\int \frac{dx}{(x+1)\sqrt{x+2}}$$



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497. Evaluate the following integrals:

$$\int \frac{dx}{(2x+3)\sqrt{4x+5}}$$



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498. Evaluate the following integrals:

$$\int \frac{dx}{(x^2+1)\sqrt{x}}$$



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499. Evaluate the following integrals: $\int \frac{1}{x(x^4 + 1)} dx$



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500. Evaluate the following integrals:

$$\int_1^3 \frac{\sqrt{4-x}}{\sqrt{x} + \sqrt{4-x}} dx$$



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501. Evaluate the following integrals:

$$\int \frac{dx}{x\sqrt{x^2 + 4x - 4}}, x > 0$$



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502. Evaluate the following integrals:

$$\int \frac{dx}{(x - 1)\sqrt{x^2 + 4}}, x > 1$$



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503. Evaluate the following integrals:

$$\int \frac{xdx}{(x^2 - 1)\sqrt{x^2 + 1}}, x > 1$$



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504. Evaluate the following integrals:

$$\int \frac{x}{(x^2 + 4)\sqrt{x^2 - 5}} dx.$$



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505. Evaluate the following integrals:

$$\int \frac{1}{(x^2 - 1)\sqrt{x^2 + 1}} dx, x > 0$$



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506. Evaluate the following integrals:

$$\int \frac{\sqrt{1+x^2}}{1-x^2} dx$$



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507. Evaluate the following integrals:

$$\int \frac{(x+4)dx}{(x^2+6x+10)\sqrt{x+3}}$$



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508. Evaluate the following integrals:

$$\int \frac{x}{(x^2 - 3x + 2)\sqrt{x - 1}} dx.$$



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509. Evaluate the following integrals:

$$\int \sqrt{2x^2 - 1}(4x) dx.$$



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510. Evaluate the following definite integrals :

$$\int_0^2 13x dx$$





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511. Evaluate the following definite integrals

3

$$\int_1^3 (2x - 1) dx.$$



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512. Evaluate the following definite integrals

7

$$\int_4^7 (11x + 1) dx.$$



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513. Evaluate the following definite integrals :

$$\int_1^2 (2x + 3) dx.$$

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514. Evaluate the following definite integrals :

$$\int_0^5 (1 + x) dx$$

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515. Evaluate the following definite integrals :

$$\int_3^5 (2x - 5) dx.$$

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516. Evaluate the following definite integral as limit of

sum : $\int_a^b x dx$



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517. Evaluate the following definite integrals as the

limit of a sum:

$\int_1^3 x^2 dx.$



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518. Evaluate the following definite integrals as the limit of a sum:

$$\int_0^2 (x^2 + 1) dx.$$



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519. Evaluate the following definite integrals :

$$\int_0^2 (x^2 + 3) dx$$



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520. Evaluate the following definite integrals as the limit of a sum:

$$\int_0^3 (x^2 + 4) dx$$



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521. Evaluate the following definite integrals as the limit of a sum:

$$\int_0^2 (2x^2 + 1) dx$$



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522. Evaluate the following definite integrals as the limit of a sum:

$$\int_a^b (\sin x) dx$$





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523. Evaluate the following definite integrals :

$$\int_a^b a \cos x dx.$$



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524. Evaluate the following definite integrals :

$$\int_0^{\frac{\pi}{2}} \sin 2x dx$$



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525. Evaluate the following definite integrals as the limit of a sum:

$$\int_0^{\pi} \cos x dx$$



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526. Evaluate the following definite integrals as the limit of a sum:

$$\int_0^2 e^x dx.$$



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527. Evaluate the following definite integrals :

$$\int_0^5 -1e^x dx.$$

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528. Evaluate the following definite integrals :

$$\int_0^2 0e^{-x} dx.$$

 [Watch Video Solution](#)

529. Evaluate the following definite integrals :

$$\int_0^4 1x^3 dx.$$

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530. Evaluate the following definite integrals :

$$\int_a^b ax^3 dx, b > a > 0$$



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531. Evaluate the following definite integrals :

$$\int_a^b \frac{1}{\sqrt{x}} dx, b > a > 0$$



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532. Evaluate the following definite integrals :

$$\int_0^4 (x + e^{2x}) dx$$

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533. Evaluate $\int_{-1}^2 (e^{3x} + 7x - 5) dx$ as a limit of sums.

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534. Prove that following: $\int_0^a 3x^2 dx = 8$, find the value of 'a'.

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535. If $\int_0^b ax^3 dx = 0$ and $\int_0^b ax^2 dx = \frac{2}{3}$, find the value of a and b .

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536. If $f(x)$ is of the form $f(x) = a + bx + cx^2$, show that

$$\int_0^1 of(x)dx = \frac{1}{6} \left[f(0) + 4f\left(\frac{1}{2}\right) + f(1) \right]$$

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537. $\int_0^1 (4x^3 - 5x^2 + 6x + 9) dx$

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$$538. \int_2^1 \frac{x^2 - 2x + 1}{x^4} dx$$



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$$539. \int_0^{\pi/2} (5\sin x + 2\cos x) dx$$



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$$540. \int_{\pi/6}^{\pi/3} \cot x dx.$$



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$$541. \int_{\pi/4}^{\pi/2} \operatorname{cosec} x dx.$$



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$$542. \int_0^{\pi/2} \sin x dx.$$



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$$543. \int_0^1 \frac{dx}{\sqrt{1-x^2}}$$



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$$544. \int_0^1 \frac{1-x}{1+x} dx$$

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$$545. \int_0^1 \frac{dx}{1+x^2}$$

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$$546. \int_0^1 \frac{dx}{2x-3}$$

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$$547. \int_1^3 (x^2 + e^x)(x^3 + 3e^x + 4) dx$$

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$$548. \int_0^{\pi/3} \frac{\cos x}{3 + 4\sin x} dx$$

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$$549. \int_0^2 13x\sqrt{5 - x^2} dx$$

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$$550. \int_0^1 \frac{2x + 3}{5x^2 + 1} dx$$



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$$551. \int_0^2 \frac{6x}{x^2 + 4} dx$$



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$$552. \text{ Evaluate: } \int_0^1 -15x^4 \sqrt{x^5 + 1} dx$$



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$$553. \int_a^b \frac{\log x}{x} dx$$

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$$554. \int_1^2 \frac{3x}{9x^2 - 1} dx$$

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$$555. \int_0^1 \frac{x}{\sqrt{1+x^2}} dx$$

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556. Evaluate:

$$\int_0^{\pi/2} \cos^2 x dx.$$



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557. $\int_0^{\pi/2} \sin^2 x dx.$



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558. $\int_0^{\pi/2} \sqrt{1 - \cos 2x} dx$



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$$559. \int_0^{\pi/4} \sqrt{1 + \sin 2x} dx$$



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$$560. \text{ Evaluate the following: } \int_0^{\pi/2} \frac{\sin^2 x}{(1 + \cos x)^2} dx$$



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$$561. \int_0^{\pi/2} \frac{\sin \theta}{\sqrt{1 + \cos \theta}} d\theta$$



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562. Evaluate the following integrals:

$$\int_0^{\pi/2} \frac{\sin x}{1 + \cos^2 x} dx$$

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563.
$$\int_2^4 \frac{x}{x^2 + 1} dx$$

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564.
$$\int_0^{\pi/4} \frac{\cos x}{1 + \sin^2 x} dx$$

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$$565. \int_0^1 x^2 e^{x^3} dx$$



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$$566. \int_0^{\pi/2} \sin^3 x dx$$



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$$567. \int_0^{\pi/4} \sin 2x \sin 3x dx$$



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$$568. \int_0^{\pi/4} 2 \tan^3 x dx$$



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$$569. \int_0^{\pi/2} \frac{dx}{a^2 \cos^2 x + b^2 \sin^2 x}$$



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$$570. \int_0^{\pi/4} \frac{\tan^3 x}{1 + \cos 2x} dx$$



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$$571. \int_0^{\pi/4} \frac{\sin x}{\cos 3x + 3\cos x} dx$$

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$$572. \int_0^{\pi/2} \sin^4 x dx$$

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$$573. \int_0^{\pi/2} \sin^2 x \cos^2 x dx$$

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$$574. \int_0^{\pi} \frac{1}{1 + \sin x} dx$$

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$$575. \int_1^2 \frac{dx}{(x + 1)(x + 2)}$$

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$$576. \int_1^2 \frac{x}{(x + 1)(x + 2)} dx$$

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$$577. \int_1^3 \frac{dx}{x^2(x+1)}$$



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$$578. \int_0^1 \frac{4x^2 + 3}{8x^2 + 4x + 5} dx$$



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$$579. \int_0^2 \frac{dx}{4 + x - x^2}$$



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$$580. \int_0^2 x\sqrt{x+2} dx$$

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$$581. \int_0^8 x\sqrt{x-4} dx$$

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$$582. \int_0^1 \sin^{-1} x dx.$$

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$$583. \int_0^1 \cos^{-1} x dx$$

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$$584. \int_0^{\frac{\pi}{2}} x^2 \sin x dx$$

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$$585. \int_0^{\frac{\pi}{2}} \frac{\cos x}{(1 + \sin x)(2 + \sin x)} dx.$$

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$$586. \int_0^1 \frac{2x}{(x^2 + 1)(x^2 + 2)} dx$$

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$$587. \int_0^1 \frac{dx}{2e^x - 1}$$

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$$588. \int_2^e \left(\frac{1}{\log x} - \frac{1}{(\log x)^2} \right) dx$$

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589. Prove that $\int_{-a}^a \sqrt{\frac{a-x}{a+x}} dx = a\pi$

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590. $\int_0^{\frac{\pi}{2}} x^2 \cos 2x dx$

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591. $\int_0^{\frac{\pi}{2}} \sqrt{\sin x} \cos^5 x dx.$

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592. Evaluate:

$$\int_0^{\pi/2} \frac{dx}{2\cos x + 4\sin x}$$

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593. Evaluate the following integrals :

$$\int_0^{\pi/2} \frac{dx}{a\cos x + b\sin x}, a, b > 0$$

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594. $\int_0^{\pi/2} \frac{\sin x \cos x}{1 + \sin^4 x} dx.$

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$$595. \int_0^{\frac{\pi}{2}} \sin^6 x dx.$$

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$$596. \int_0^{\frac{\pi}{2}} \cos^6 x dx.$$

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$$597. \int_0^a \frac{dx}{a^2 + ax - x^2}$$

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$$598. \int_{\frac{\pi}{4}}^{\frac{\pi}{2}} e^x (\log \sin x + \cot x) dx$$



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$$599. \int_0^1 (\tan^{-1} x) dx$$



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$$600. \int_0^1 x \log(1 + 2x) dx$$



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$$601. \int_0^{\pi} (\cos 2x \log(\sin x)) dx$$

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$$602. \int_0^1 \left(\frac{1 - x^2}{1 + x^2} \right) dx$$

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$$603. \int_{\pi/6}^{\pi/2} \frac{\cos x}{\sin\left(\frac{x}{2}\right) + \cos\left(\frac{x}{2}\right)} dx$$

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$$604. \int_{\frac{\pi}{2}}^{\frac{\pi}{3}} \frac{\sqrt{1 + \cos x}}{(1 - \cos x)^{5/2}} dx$$



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$$605. \int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \frac{\sqrt{1 - \cos x}}{(1 + \cos x)^{5/2}} dx$$



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$$606. \int_{\pi/6}^{\pi/2} \frac{\cos x}{\sin\left(\frac{x}{2}\right) + \cos\left(\frac{x}{2}\right)} dx$$



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$$607. \int_0^1 \sin^{-1} \left(\frac{2x}{1+x^2} \right) dx$$

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$$608. \int_0^{\pi/2} \frac{dx}{a^2 \cos^2 x + b^2 \sin^2 x}$$

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$$609. \int_0^{\pi/4} \frac{\sin^2 x \cos^2 x}{(\sin^3 x + \cos^3 x)^2} dx$$

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$$610. \int_0^1 (\tan^{-1} x) dx$$

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$$611. \int_0^{\infty} \frac{x \tan^{-1} x}{1 + x^2} dx$$

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$$612. \int_1^2 \frac{dx}{(x+1)\sqrt{x^2-1}}$$

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613. $\int_0^{1/2} \frac{dx}{(1+x^2)\sqrt{1-x^2}}$

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614. Evaluate the following integrals by changing the limits of integration after suitable substitutions:

$$\int_0^{\pi/2} \frac{dx}{5+4\sin x}$$

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615. Evaluate the following integrals by changing the limits of integration after suitable substitutions:

$$\int_0^{\pi} \frac{dx}{5 + 3\cos x}$$

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$$616. \int_0^{\pi} \frac{dx}{3 + 2\sin x + \cos x}$$

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$$617. \text{ Evaluate: } \int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x} dx$$

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$$618. \int_0^a \frac{dx}{a^2 + ax - x^2}$$



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619. If $\int_0^a \sqrt{x} dx = 2a \int_0^{\pi/2} \sin^3 x dx$, evaluate $\int_0^{a+1} ax dx$



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620. Prove that:

$$\int_0^{\frac{\pi}{4}} (\sqrt{\tan x} + \sqrt{\cot x}) dx = \frac{\pi}{\sqrt{2}}$$



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621. Prove that $\int_0^a f(x) dx = \int_0^a f(a-x) dx$.



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622. Prove that : $\int_0^{2a} of(x)dx = \int_0^{2a} of(2a - x)dx$



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623. By using properties of definite integrals, evaluate the following:

$$\int_0^2 -2|x + 1|dx$$



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624. By using properties of definite integrals, evaluate the following:

$$\int_2^{-2} |2x + 3| dx$$

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625. By using properties of definite integrals, evaluate the following:

$$\int_5^{-5} |x + 2| dx$$

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626. By using properties of definite integrals, evaluate the following:

$$\int_0^5 -5|x + 3|dx.$$



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627. Evaluate the following:

$$\int_{\pi/4}^{\pi/2} -\pi/4|\sin x|dx$$



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628. Evaluate the following:

$$\int_0^{\pi/2} -\pi/2|\sin x|dx$$



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629. Evaluate the following:

$$\int_{-\pi/4}^{\pi/4} \sin^2 x dx$$



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630. By using properties of definite integrals, evaluate the following:

$$\int_0^{\pi} |\cos x| dx.$$



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631. By using properties of definite integrals, evaluate the following:

$$\int_1^3 |x^2 - 2x| dx$$



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632. By using properties of definite integrals, evaluate the following:

$$\int_0^{\pi} |\cos x| dx.$$



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633. By using properties of definite integrals, evaluate the following:

$$\int_0^1 -1e^{|x|} dx$$

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634. By using properties of definite integrals, evaluate the following:

$$\int_1^4 f(x) dx \text{ where } f(x) = \begin{cases} 4x + 3 & \text{if } 1 \leq x \leq 2 \\ 3x + 5 & \text{if } 2 \leq x \leq 4 \end{cases}$$

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635. By using properties of definite integrals, evaluate the following:

$$\int_1^4 f(x) dx \text{ where } f(x) = \begin{cases} 2x + 8 & 1 \leq x \leq 2 \\ 6x & 2 \leq x \leq 4 \end{cases}$$

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636. By using properties of definite integrals, evaluate the following:

$$\int_0^9 f(x) dx \text{ where } f(x) = \begin{cases} \sin x & 0 \leq x \leq \frac{\pi}{2} \\ 1 & \frac{\pi}{2} \leq x \leq 3 \\ e^{x-3} & 3 \leq x \leq 9 \end{cases}$$

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637. Evaluate the following integrals:

$$\int_0^{\pi/2} \frac{\sin^3 x}{\sin^3 x + \cos^3 x} dx$$

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638. Evaluate the following integrals:

$$\int_0^{\pi/2} \frac{\sin^{3/2} x}{\sin^{3/2} x + \cos^{3/2} x} dx$$

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639. Evaluate: $\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x} dx$



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640. By using the properties of definite integrals, evaluate the integrals:

$$\int_0^{\frac{\pi}{2}} \frac{\sqrt{\cos x}}{\sqrt{\cos x} + \sqrt{\sin x}} dx$$

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641. Evaluate the following integrals:

$$\int_0^{\pi/2} \frac{dx}{1 + \sqrt{\cot x}}$$

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642. By using properties of definite integrals, evaluate

the following:

$$\int_0^{\pi/2} \frac{\sqrt{\cot x}}{1 + \sqrt{\cot x}} dx$$



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643. By using properties of definite integrals, evaluate

the following:

$$\int_0^{\pi/2} \frac{\tan^n x}{1 + \tan^n x} dx, n \in \mathbb{Q}$$



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644. By using the properties of definite integrals,

evaluate the integral: $\int_0^2 x\sqrt{2-x} dx$



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645. By using properties of definite integrals, evaluate

the following:

$$\int_0^1 x(1-x)^n dx$$



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646. By using properties of definite integrals, evaluate

the following:

$$\int_0^5 \frac{(x+4)^n}{(x+4)^n + (9-x)^n} dx, n \in \mathbb{Q}.$$



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647. By using properties of definite integrals, evaluate the following:

$$\int_0^{\pi/2} -\pi/2 \sin^7 x dx$$



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648. By using properties of definite integrals, evaluate the following:

$$\int_0^{\pi} \sin x \cos^3 x dx$$



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649. By using properties of definite integrals, evaluate the following:

$$\int_0^1 x(1-x)^5 dx$$

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650. By using properties of definite integrals, evaluate the following:

$$\int_0^1 -1 \sin^5 x \cos^4 x dx$$

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651. Evaluate the following: $\int_0^3 x^2(3-x)^{1/2} dx$



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652. Evaluate the following:

$$\int_0^a x^2(a-x)^{3/2} dx$$



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653. Evaluate the following:

$$\int_0^{\pi/2} \frac{x}{\sin x + \cos x} dx$$



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654. Evaluate the following:

$$\int_0^{\pi} \frac{x \tan x}{\sec x \operatorname{cosec} x} dx$$



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655. Evaluate the following:

$$\int_0^{\pi} \frac{x \tan x}{\sec x + \tan x} dx$$



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656. Evaluate the following:

$$\int_0^{\pi/2} \frac{\sin^2 x}{\sin x + \cos x} dx$$



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657. Evaluate the following:

$$\int_0^{\pi/2} \frac{\sin x - \cos x}{1 + \sin x \cos x} dx$$



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658. Evaluate the following:

$$\int_0^{\pi/2} \log(\tan x) dx$$



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659. Evaluate the integrals

$$\int_0^{\frac{\pi}{4}} (\log(1 + \tan x)) dx$$



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$$660. \int_0^{\frac{\pi}{2}} \cos^6 x dx.$$



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$$661. \int_0^{\pi/2} \sin^2 x \cos^2 x dx$$



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662. Evaluate the following:

$$\int_0^a \frac{dx}{x + \sqrt{a^2 - x^2}}$$



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663. Evaluate the following:

$$\int_0^{\pi} \frac{x dx}{1 + \cos^2 x}$$



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664.

Prove

that

$$\int_0^{\pi/2} \log(\sin \theta) d\theta = \int_0^{\pi/2} \log(\cos \theta) d\theta = -\frac{\pi}{2} \log 2.$$



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665. Evaluate the following:

$\pi/2$

$$\int_0^{\pi/2} (2\log\sin x - \log\sin 2x) dx$$



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666. Evaluate: $\int_0^1 x \left(\tan^{-1} x \right)^2 dx$



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667. Evaluate the following:

$$\int_0^1 \left(\cos^{-1} x \right)^2 dx$$



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668. Evaluate the following:

$$\int_0^1 x \left(\tan^{-1} x \right)^2 dx.$$



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669. If f is periodic with period p , prove that

$$\int_0^{np} pf(x)dx = (n - 1) \int_0^p pf(x)dx, \text{ for all } n \in \mathbb{N}.$$



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670. If $f(a+b-x)=f(x)$, then prove that

$$\int_a^b xf(x)dx = \frac{a+b}{2} \int_a^b f(x)dx.$$



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671. Evaluate $\int e^{\log x} dx$



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672. Evaluate $\int \sin\left(\frac{3\pi}{2} + x\right) dx$



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673. Evaluate: $\int (a^x + b^x)^2 dx$



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674. Evaluate: $\int (\sec^2(3x + 4) dx)$



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675. Evaluate: $\int \operatorname{cosec}^2(2 - 3x) dx$



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676. Evaluate: $\int e^{-\cot x} \operatorname{cosec}^2 x dx$

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677. Evaluate: $\int x\sqrt{x^2 - 1} dx$

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678. $\int \frac{x - 1}{x(x - \log x)} dx$

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679. Evaluate: $\int 8\sin\left(\frac{x}{4}\right)\cos\left(\frac{x}{4}\right)\cos\left(\frac{x}{2}\right) dx$

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680. Evaluate: $\int e^x(\cos x - \sin x)dx$



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681. Evaluate: $\int \frac{e^{-1/x}}{x^2} dx$



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682. Evaluate: $\int \frac{dx}{a^2x^2 + b^2}, ab \neq 0$



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683. Evaluate: $\int xe^x dx$



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684. Evaluate: $\int \frac{1 + \cos x}{1 + \sin x} dx$



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685. Evaluate $\int e^x \left(\tan^{-1} x + \frac{1}{(1 + x^2)} \right) dx.$



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686. Evaluate: $\int \frac{1}{x(x+1)} dx$

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687. Evaluate: $\int \sqrt{x^2 + 1} dx$

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688. Evaluate: $\int \frac{x}{\sqrt{1-x^2}} dx$

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689. Evaluate the following integrals:

$$\int \frac{3ax}{b^2 + c^2x^2} dx$$

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690. Evaluate: $\int x^x(1 + \log x) dx$

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691. Evaluate: $\int \left(\frac{2a}{\sqrt{x}} - \frac{b}{x^2} + 3(x) \right) dx$

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692. Evaluate: $\int \left(x - \frac{1}{x}\right)^2 dx$

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693. Evaluate: $\int e^{-\log x} dx$

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694. Evaluate: $\int \tan^8 x \sec^4 x dx.$

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695. Evaluate: $\int \left(x - \frac{1}{x}\right)^2 dx$



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696. Evaluate: $\int \frac{x^2 + 1}{x^2} dx$



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697. Evaluate: $\int \frac{x}{x^4 - 1} dx$



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698. Verify that $\int \frac{2x - 1}{2x + 3} dx = x - \log(2x + 3)^2 + C$



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699. Verify that $\int \frac{2x + 3}{x^2 + 3x} dx = \log|x^2 + 3x| + C.$



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700. Evaluate: $\int \tan^2 x \sec^4 x dx$



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701. Evaluate $\int \frac{dx}{1 + \cos x}$



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702. Evaluate $\int \tan^{-1} x dx$.



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703. Evaluate $\int |x| dx$



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704. $\int \frac{1}{x \log x} dx$



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705. Evaluate: $\int \frac{\log x}{x} dx$



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706. Evaluate: $\int \frac{dx}{\sqrt{16 - 9x^2}}$



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707. Evaluate: $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$



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708. Evaluate: $\int (10^x + x^{10} + 10^{10}) dx$

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709. Write the value of $\int \sqrt{x^2 - 1} dx$

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710. Evaluate

$$\int \tan^2 x dx$$

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711. Evaluate: $\int \sqrt{1 + \sin x} dx$



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712. Evaluate: $\int (\tan^2 x + \cot^2 x) dx$



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713. Evaluate the following integrals:

$$\int \frac{\sin x + \cos x}{\sqrt{1 + \sin 2x}} dx, 0 \leq x \leq \frac{\pi}{2}$$



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714. Evaluate: $\int \frac{x^2}{1-x^4} dx$

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715. Evaluate: $\int f(x) dx$, where $f(x) = e^{\sqrt{x^2+1}}$

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716. Evaluate: $\int (\tan x + \cot x) dx$

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717. Evaluate: $\int \frac{\sqrt{x}}{4+x\sqrt{x}} dx$



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718. Evaluate: $\int \frac{x^2 + 2}{x + 1} dx$



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719. Evaluate: $\int \frac{e^{6\log x} - e^{5\log x}}{e^{4\log x} - e^{3\log x}} dx$



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720. Find : $\int \frac{x^3 dx}{x^4 + 3x^2 + 2} dx.$



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721. Evaluate: $\int \frac{dx}{2\sin^2 x + 5\cos^2 x}$

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722. Write the antiderivative of $\left(3\sqrt{x} + \frac{1}{\sqrt{x}}\right)$

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723. Evaluate $\int \frac{2 - 3\sin x}{\cos^2 x} dx$

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724. Evaluate the following integrals:

$$\int \sec x (\sec x + \tan x) dx$$



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725. $\int_0^{\pi/2} \sin^2 x dx.$



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726. Evaluate: $\int_0^{\pi} (x \sin x) dx$



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727. Evaluate: $\int_4^9 \frac{1}{2} \sqrt{x} dx$

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728. Evaluate: $\int_2^3 \frac{\sqrt{x}}{\sqrt{x} + \sqrt{5-x}} dx$

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729. Evaluate: $\int_2^3 \frac{1}{2\sqrt{x}} e^{\sqrt{x}} dx$

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730. Evaluate: $\int_0^{\pi/3} \cos^2 x dx$

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731. Evaluate: $\int_0^{\pi/2} \frac{\tan^7 x}{\cot^7 x + \tan^7 x} \cdot dx$

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732. Evaluate: $\int_2^8 \frac{\sqrt{10-x}}{\sqrt{x} + \sqrt{10-x}} dx$

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733. Evaluate: $\int_0^{\pi} \sin x dx$

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734. Evaluate: $\int_0^{\pi} \cos x dx$

 [Watch Video Solution](#)

735. Evaluate: $\int_0^1 -1 \sin^3 x dx$

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736. Evaluate: $\int_0^{\frac{\pi}{2}} -\frac{\pi}{2} \tan x dx$

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737. Evaluate: $\int_0^2 (x^2 + 3) dx$

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738. Evaluate: $\int_0^2 e^x dx$

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739. Evaluate: $\int_0^1 \frac{dx}{e^x + e^{-x}}$

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740. Evaluate: $\int_1^2 \frac{2x dx}{\sqrt{1+x^2}}$

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741. Evaluate: $\int^2 -2(x + \sin x) dx$

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742. Evaluate: $\int_0^{\pi} \cos^3 x dx$

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743. Write the value of $\int_0^{\pi/2} \log|\sin x| dx$.

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744. Write the value of $\int_0^{\pi/2} \tan^2 x dx$

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745. Evaluate $\int_0^{\pi/4} \sec^2 x dx$

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746. Evaluate: $\int_0^{\pi} x \sin x \cos^2 x dx$.

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747. Evaluate: $\int_0^{\pi} x \cos^2 x dx$

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748. Evaluate: $\int_0^{\pi} x \sin^2 x dx$

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749. Evaluate: $\int_{-\pi/4}^{\pi/4} \cot x \operatorname{cosec} x dx$

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750. Evaluate: $\int_0^1 -1 \log \left(\frac{x^2 - x + 1}{x^2 + x + 1} \right) dx$

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751. Write the value of $\int_0^{\pi/2} \log(\cos x) dx$

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752. Write the value of $\int_0^{\pi} \log(\sin x) dx$.

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753. Evaluate: $\int_0^{\pi} \tan^x dx$

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$$754. \int_0^{\pi/2} \sin^2 x \cos^2 x dx$$

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755. Evaluate:

$$\int_0^{\pi} x \log(\sin x) dx$$

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$$756. \text{ Evaluate: } \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin^5 x dx$$

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757. Evaluate: $\int_0^2 \sqrt{4 - x^2} dx$

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758. Evaluate: $\int_2^4 \frac{x}{x^2 + 1} dx$

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759. Evaluate: $\int_0^3 \frac{dx}{16 + x^2}$

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760. If $f(x) = \int_0^x t \sin t dt$, then write the value of $f'(x)$.



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761. Find an anti derivative (or integral) of the following functions by the method of inspection: $\sin(2x)$



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762. Find an anti derivative (or integral) of the following functions by the method of inspection : $\cos(3x)$



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763. Find an anti derivative (or integral) of the following functions by the method of inspection : e^{2x}

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764. Find an anti derivative (or integral) of the following functions by the method of inspection : $(ax + b)^2$

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765. Find an anti derivative (or integral) of the following functions by the method of inspection :

$$\sin 2x - 4e^{3x}$$



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766. Find the following integral: $\int (4e^{3x} + 1) dx$



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767. Find the following integrals

$$\int x^2 \left(1 - \frac{1}{x^2} \right) dx$$





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768. Find the following integral : $\int (ax^2 + bx + c) dx$



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769. Find the following integral : $\int (2x^2 + e^x) dx$



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770. Evaluate the following integrals: $\int \left(\sqrt{x} + \frac{1}{\sqrt{x}} \right) dx$



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771. Find the following integral : $\int \frac{x^3 + 5x^2 - 4}{x^2} dx$

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772. Find the following integrals:

$$\int \frac{x^2 + 2x + 9}{x} dx$$

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773. Find the following integral : $\int \left(\frac{x^3 - x^2 + x - 1}{x - 1} \right) dx$

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774. Find the following integral : $\int ((1 - x)\sqrt{x})dx$

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775. Find the following integral :

$$\int (\sqrt{x}(3x^2 + 2x + 3))dx$$

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776. Find the following integral : $\int (2x - 3\cos x + e^x)dx$

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777. Integrate the following functions :

$$\int (2x^2 - 3\sin x + 5\sqrt{x}) dx$$

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778. Find the following integral : $\int \sec x (\sec x + \tan x) dx$

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779. Find the following integral : $\int \frac{\sec^2(x)}{\operatorname{cosec}^2(x)} dx$

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780. Find the following integral : $\int \frac{2 - 3\sin x}{\cos^2(x)} dx$



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781. Choose the correct answer : The anti derivative of

$\left(\sqrt{x} + \left(\frac{1}{\sqrt{x}} \right) \right)$ equals.

A. $\frac{1}{3}x^{\frac{1}{3}} + 2x^{\frac{1}{2}} + C$

B. $\frac{2}{3}x^{\frac{2}{3}} + \frac{1}{2}x^2 + C$

C. $\frac{2}{3}x^{\frac{3}{2}} + 2x^{\frac{1}{2}} + C$

D. $\frac{3}{2}x^{\frac{3}{2}} + \frac{1}{2}x^{\frac{1}{2}} + C$



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782. If $\left(\frac{d}{dx}\right)f(x) = 4x^3 - \frac{3}{x^4}$ such that $f(2) = 0$. Then $f(x)$

is

A. $x^4 + \frac{1}{x^3} - \frac{129}{8}$

B. $x^3 + \frac{1}{x^4} + \frac{129}{8}$

C. $x^4 + \frac{1}{x^3} + \frac{129}{8}$

D. $x^3 + \frac{1}{x^4} - \frac{129}{8}$



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783. Integrate the function

$$\frac{2x}{1+x^2}$$



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784. Integrate the function: $\frac{(\log x)^2}{x}$



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785. Integrate the function: $\frac{1}{x+x\log x}$



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786. Integrate the function: $\sin x \sin(\cos x)$



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787. Integrate the function: $\sin(ax + b)\cos(ax + b)$



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788. Integrate the function: $\sqrt{ax + b}$



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789. Integrate the function: $x\sqrt{x + 2}$



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790. Integrate the function: $x\sqrt{1 + 2x^2}$

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791. Integrate the function: $(4x + 2)\sqrt{x^2 + x + 1}$

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792. Integrate the functions:

$$\frac{1}{x} - \sqrt{x}$$

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793. Integrate the function: $\frac{x}{\sqrt{x+4}}, x > 0$

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794. Integrate the function: $(x^3 - 1)^{\frac{1}{3}} x^5$

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795. Integrate the function: $\frac{x^2}{(2 + 3x^3)^3}$

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796. Integrate the function

$$\frac{1}{x(\log x)^m}, x > 0, m \neq 1$$



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797. Integrate the function: $\frac{x}{9 - 4x^2}$



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798. Integrate the function: e^{2x+3}



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799. Integrate the function: $\frac{x}{e^{x^2}}$

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800. Integrate the function: $\frac{e^{\tan^{-1}x}}{1+x^2}$

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801. Integrate the function: $\frac{e^{2x} - 1}{e^{2x} + 1}$

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802. Integrate the function: $\frac{e^{2x} - e^{-2x}}{e^{2x} + e^{-2x}}$

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803. Integrate the function: $\tan^2(2x - 3)$

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804. Integrate the function: $\sec^2(7 - 4x)$

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805. Integrate the function: $\frac{\sin^{-1}x}{\sqrt{1-x^2}}$

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806. Integrate the function: $\frac{2\cos x - 3\sin x}{6\cos x + 4\sin x}$

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807. Integrate the function: $\frac{1}{\cos^2 x (1 - \tan x)^2}$

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808. Integrate the function: $\frac{\cos\sqrt{x}}{\sqrt{x}}$

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809. Integrate the function: $\sqrt{\sin 2x} \cos 2x$

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810. Integrate the function: $\frac{\cos x}{\sqrt{1 + \sin x}}$

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811. Integrate the function: $\frac{\sin x}{1 + \cos x}$

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812. Integrate the function: $\frac{\sin x}{(1 + \cos x)^2}$

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813. Integrate the function: $\frac{1}{1 + \cot x}$

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814. Integrate the function: $\frac{1}{1 - \tan x}$

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815. Integrate the function

$$\frac{\sqrt{\tan x}}{\sin x \cos x}$$

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816. Integrate the function: $\frac{(1 + \log x)^2}{x}$

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817. Integrate the function: $(x + 1) \frac{(x + \log x)^2}{x}$



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818. Integrate the function

$$\frac{x^3 \sin(\tan^{-1} x^4)}{1 + x^8}$$



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819. Integrate the function

$$\frac{\sqrt{\tan x}}{\sin x \cos x}$$



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820. $\int \frac{10x^9 + 10^x \log_e 10}{x^{10} + 10^x} dx$ is equal to :

A. $10^x - x^1 + C$

B. $10^x + x^{10} + C$

C. $(10^x - x^{10}) + C$

D. $\log(10^x + x^{10}) + C$



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821. $\int \frac{dx}{\sin^2 x \cos^2 x}$ equals :

A. $\tan x + \cot x + C$

B. $\tan x - \cot x + C$

C. $\tan x \cot x + C$

D. $\tan x - \cot 2x + C$



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822. Find the integrals of the function: $\sin^2(2x + 5)$



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823. Find the integrals of the function: $\sin^3 x \cos 4x$



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824. Find the integrals of the function: $\cos 2x \cos 4x \cos 6x$



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825. Find the integrals of the function: $\sin^3(2x + 1)$



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826. Find the integrals of the function: $\sin^3 x \cos^3 x$



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827. Find the integrals of the functions:

$$\sin x \sin 2x \sin 3x$$



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828. Find the integrals of the functions

$$\sin 4x \sin 8x$$



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829. Find the integrals of the function: $\frac{1 - \cos x}{1 + \cos x}$



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830. Find the integrals of the function: $\frac{\cos x}{1 + \cos x}$



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831. Find the integrals of the function: $\sin^4 x$



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832. Find the integrals of the function: $\cos^4(2x)$



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833. Find the integrals of the function: $\frac{\sin^2 x}{1 + \cos x}$

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834. Find the integrals of the function: $\frac{\cos 2x - \cos 2\alpha}{\cos x - \cos \alpha}$

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835. Find the integrals of the function: $\frac{\cos x - \sin x}{1 + \sin 2x}$

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836. Find the integrals of the function: $\tan^3(2x)\sec 2x$



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837. Find the integrals of the function: $\tan^4 x$



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838. Find the integrals of the function: $\frac{\sin^3 x + \cos^3 x}{\sin^2 x \cos^2 x}$



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839. Find the integrals of the function: $\frac{\cos 2x + 2\sin^2 x}{\cos^2 x}$

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840. Find the integrals of the functions:

$$\frac{1}{\sin x \cos^3 x}$$

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841. Find the integrals of the function: $\frac{\cos 2x}{(\cos x + \sin x)^2}$

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842. Find the integrals of the function: $\sin^{-1}(\cos x)$



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843. Find the integrals of the function:

$$\frac{1}{\cos(x - a)\cos(x - b)}$$



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844. $\int \frac{\sin^2 x - \cos^2 x}{\sin^2 x \cos^2 x} dx$ is equal to

A. $\tan x + \cot x + C$

B. $\tan x + \operatorname{cosec} x + C$

C. $-\tan x + \cot x + C$

D. $\tan x + \sec x + C$

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845. $\int \frac{e^x(1+x)}{\cos^2(xe^x)} dx.$

A. $-\cot(e^{x^2}) + C$

B. $\tan(xe^x) + C$

C. $\tan(e^x) + C$

D. $\cot(e^x) + C$



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846. Integrate the functions: $\frac{3x^2}{x^6 + 1}$



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847. Integrate the functions:

$$\frac{1}{\sqrt{1 + 3x^2}}$$



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848. Integrate the functions: $\frac{1}{\sqrt{(2 - x)^2 + 1}}$



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849. $\int \frac{dx}{\sqrt{9 - 25x^2}}$



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850. Integrate the functions: $3 \frac{x}{1 + 2x^4}$



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851. Integrate the functions: $\frac{x^2}{1 - x^6}$



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852. Integrate the functions: $\frac{x - 1}{\sqrt{x^2 - 1}}$

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853. Integrate the functions: $\frac{x^2}{\sqrt{x^6 + a^6}}$

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854. Integrate the functions: $\frac{\sec^2 x}{\sqrt{\tan^2 x + 4}}$

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855. Integrate the functions: $\frac{1}{\sqrt{x^2 + 2x + 2}}$

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856. Integrate the functions: $\frac{1}{9x^2 + 6x + 5}$

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857. Integrate the functions: $\frac{1}{\sqrt{7 - 6x - x^2}}$

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858. Integrate the functions: $\frac{1}{\sqrt{(x-1)(x-2)}}$



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859. Integrate the functions: $\frac{1}{\sqrt{8+3x-x^2}}$



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860. Integrate the functions :

$$\frac{1}{\sqrt{(x-a)(x-b)}}$$



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861. Integrate the functions: $\frac{4x + 1}{\sqrt{2x^2 + x - 3}}$

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862. Integrate the functions: $\frac{x + 2}{\sqrt{x^2 - 1}}$

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863. Integrate the functions: $\frac{5x - 2}{1 + 2x + 3x^2}$

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864. Integrate the functions: $\frac{6x + 7}{\sqrt{(x - 5)(x - 4)}}$

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865. Integrate the functions: $\frac{x + 2}{\sqrt{4x - x^2}}$

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866. Integrate the functions: $\frac{x + 2}{\sqrt{x^2 + 2x + 3}}$

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867. Integrate the functions: $\frac{x + 3}{x^2 - 2x - 5}$



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868. Integrate the functions: $\frac{5x + 3}{\sqrt{x^2 + 4x + 10}}$



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869. Integrate the functions: $\frac{x + 2}{\sqrt{4x - x^2}}$



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870. $\int \frac{dx}{x^2 + 2x + 2}$ equals :

A. $x \tan^{-1}(x + 1) + C$

B. $\tan^{-1}(x + 1) + C$

C. $(x + 1) \tan^{-1} + C$

D. $\tan^{-1}x + C$



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871. Choose the correct answer: $\int \frac{dx}{\sqrt{9x - 4x^2}}$ equals:

A. $\frac{1}{9} \frac{\sin^{-1}(9x - 8)}{8} + C$

B.

C. $\frac{1}{2} \sin^{-1} \left(\frac{8x - 9}{9} \right) + C$

D. $\frac{1}{3} \sin^{-1} \left(\frac{9x - 8}{8} \right) + C$

Answer: $\frac{1}{2} \sin^{-1} \left(\frac{9x - 8}{9} \right) + C$

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872. Integrate the rational function: $\frac{x}{(x + 1)(x + 2)}$

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873. Integrate the rational functions:

$$\frac{1}{x^2 - 9}$$



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874. Integrate the rational function: $\frac{3x - 1}{(x - 1)(x - 2)(x - 3)}$



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875. Integrate the rational function: $\frac{x}{(x - 1)(x - 2)(x - 3)}$



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876. Integrate the rational function: $2\frac{x}{x^2 + 3x + 2}$

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877. Integrate the rational function: $\frac{1 - x^2}{x(1 - 2x)}$

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878. Integrate the rational functions:

$$\frac{x}{(x^2 + 1)(2x + 3)}$$

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879. Integrate the rational function: $\frac{x}{(x-1)^2(x+2)}$

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880. Integrate the rational function: $\frac{3x+5}{x^3-x^2-x+1}$

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881. Integrate the rational function: $\frac{2x-3}{(x^2-1)(2x+3)}$

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882. Integrate the rational function: $5 \frac{x}{(x+1)(x^2-4)}$

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883. Integrate the rational function: $\frac{x^3 + x + 1}{x^2 - 1}$

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884. Integrate the rational function: $\frac{2}{(1-x)(1+x^2)}$

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885. Integrate the rational function: $\frac{3x - 1}{(x + 2)^2}$

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886. Integrate the rational function: $\frac{1}{x^4 - 1}$

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887. Integrate the rational function: $\frac{1}{x(x^n + 1)}$

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888. Integrate the rational function: $\frac{\cos x}{(1 - \sin x)(2 - \sin x)}$

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889. Integrate the rational function: $\frac{(x^2 + 1)(x^2 + 2)}{(x^2 + 3)(x^2 + 4)}$

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890. Integrate the rational function: $2 \frac{x}{(x^2 + 1)(x^2 + 3)}$

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891. Integrate the rational function: $\frac{1}{x(x^4 - 1)}$

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892. Integrate the rational function: $\frac{1}{e^x - 1}$

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893. $\int \frac{xdx}{(x - 1)(x - 2)}$ equals :

A. $\log \left| \frac{(x - 1)^2}{x - 2} \right| + C$

$$\text{B. } \log \left| \frac{(x-2)^2}{x-1} \right| + C$$

$$\text{C. } \log \left| 9 \frac{x-1}{x-2} \right|^2 + C$$

$$\text{D. } \log |(x-1)(x-2)| + C$$



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894. $\int \frac{dx}{x(x^2+1)}$ equals :

$$\text{A. } \log|x| - \frac{1}{2} \log(x^2+1) + C$$

$$\text{B. } \log |x(x-1)| + \frac{1}{2} \log(x^2+1) + C$$

$$\text{C. } -\log|x| + \frac{1}{2} \log(x^2+1) + C$$

D. $\frac{1}{2}\log|x| + \log(x^2 + 1) + C$

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895. Integrate the function : $x\sin x$

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896. Integrate the function : $x\sin 3x$

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897. Integrate the function : x^2e^x



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898. Integrate the function : $x \log x$



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899. Integrate the functions :

$x \log 2x$



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900. Integrate the function : $x^2 \log x$



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901. Integrate the function : $x \sin x$



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902. Integrate the functions:

$$x \tan^{-1} x$$



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903. Integrate the functions:

$$x \cos^{-1} x$$



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904. Integrate the function : $(\sin^{-1} x)^2$



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905. Integrate the function: $\frac{x \cos^{-1} x}{\sqrt{1-x^2}}$



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906. Integrate the function: $x \sec^2 x$



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907. Integrate the function: $\tan^{-1} x$



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908. Integrate the function: $x(\log x)^2$



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909. Integrate the function: $(x^2 + 1) \log x$



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910. Integrate the function: $e^x(\sin x + \cos x)$

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911. Integrate the function: $\frac{xe^x}{(1+x)^2}$

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912. Integrate the function: $e^x \left(\frac{1 + \sin x}{1 + \cos x} \right)$

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913. Integrate the function: $e^x \left(\frac{1}{x} - \frac{1}{x^2} \right)$

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914. Integrate the function: $\frac{(x - 3)e^x}{(x - 1)^3}$

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915. Integrate the function: $e^{2x} \sin x$

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916. Integrate the function: $\sin^{-1}\left(\frac{2x}{1+x^2}\right)$



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917. $\int x^2 e^{x^3} dx$ equals :

A. $\frac{1}{3}e^{x^3} + C$

B. $\frac{1}{3}e^{x^2} + C$

C. $\frac{1}{2}e^{x^3} + C$

D. $\frac{1}{2}e^{x^2} + C$



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918. Choose the correct answer: $\int e^x \sec x (1 + \tan x) dx$ equals :

A. $e^x \cos x + C$

B. $e^x \sec x + C$

C. $e^x \sin x + C$

D. $e^x \tan x + C$



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919. Integrate the function: $\sqrt{4 - x^2}$



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920. Integrate the function: $\sqrt{1 - 4x^2}$



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921. Integrate the function: $\sqrt{x^2 + 4x + 6}$



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922. Integrate the function: $\sqrt{x^2 + 4x + 1}$



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923. Integrate the function: $\sqrt{1 - 4x - x^2}$



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924. Integrate the function: $\sqrt{x^2 + 4x - 5}$



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925. Integrate the functions :

$$\sqrt{1 + 3x - x^2}$$



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926. Integrate the function: $\sqrt{x^2 + 3x}$



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927. Integrate the function: $\sqrt{1 + \frac{x^2}{9}}$



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928. Choose the correct answer: $\int \sqrt{1 + x^2} dx$ is equal to:

A. $\frac{x}{2}\sqrt{1 + x^2} + \frac{1}{2}\log\left|x + \sqrt{1 + x^2}\right| + C$

B. $\frac{2}{3}\left(1 + x^2\right)^{\frac{3}{2}} + C$

$$C. \frac{2}{3}x(1+x^2)^{\frac{3}{2}} + C$$

$$D. \frac{x^2}{2}\sqrt{1+x^2} + \frac{1}{2}x^2\log\left|x + \sqrt{1+x^2}\right| + C$$



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929. Choose the correct answer: $\int \sqrt{x^2 - 8x + 7} dx$ is equal to:

A.

$$\frac{1}{2}(x-4)\sqrt{x^2-8x+7} + 9\log\left|x-4 + \sqrt{x^2-8x+7}\right| + C$$

B.

$$\frac{1}{2}(x+4)\sqrt{x^2-8x+7} + 9\log\left|x+4 + \sqrt{x^2-8x+7}\right| + C$$

C.

$$\frac{1}{2}(x-4)\sqrt{x^2-8x+7} - 3\sqrt{2}\log\left|x-4 + \sqrt{x^2-8x+7}\right| + C$$

D.

$$\frac{1}{2}(x-4)\sqrt{x^2-8x+7} - \frac{9}{2}\log\left|x-4 + \sqrt{x^2-8x+7}\right| + C$$



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930. Evaluate the following integrals:

$$\int \sqrt{x+x^2} dx$$



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931. Evaluate the following integrals:

$$\int (x) \sqrt{2x^2 + 3} dx$$



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932. Evaluate the following integrals:

$$\int (x + 3) \sqrt{3 - 4x - x^2} dx$$



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933. Evaluate the following definite integral as limit of

sum : $\int_a^b x dx$



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934. Evaluate the following definite integral as limit of

$$\text{sum} : \int_0^5 (x + 1) dx$$



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935. Evaluate the following definite integral as limit of

$$\text{sum} : \int_2^3 (x^2) dx$$



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936. Evaluate the following definite integral as limit of

$$\text{sum} : \int_1^4 (x^2 - x) dx$$

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937. Evaluate the following definite integral as limit of

$$\text{sum} : \int_{-1}^1 (e^x) dx$$

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938. Evaluate the following definite integral as limit of

$$\text{sum} : \int_0^4 (x + e^2x) dx$$

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939. Evaluate the following integrals: $\int_{-1}^1 (x + 1) dx$



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940. Evaluate the definite integral: $\int_2^3 \left(\frac{1}{x}\right) dx$



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941. Evaluate the definite integrals :

$$\int_1^2 (4x^3 - 5x^2 + 6x + 9) dx$$



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942. Evaluate the definite integrals :

$$\int_0^{\frac{\pi}{4}} \sin 2x dx$$



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943. Evaluate the following integrals.

$$\int_0^{\pi/2} \cos 2x dx$$



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944. Evaluate the definite integrals :

$$\int_0^5 4e^x dx$$



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945. Evaluate the following integrals: $\int_0^{\pi/4} \tan x dx$

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946. $\int_{\pi/4}^{\pi/2} \operatorname{cosec} x dx$.

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947. Evaluate: $\int \frac{dx}{\sqrt{1-x^2}}$

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948. Evaluate the definite integrals :

$$\int_2^3 \frac{dx}{x^2 + 1}$$



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949. Evaluate the definite integrals

$$\int_2^3 \frac{dx}{x^2 - 1}$$



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950. Evaluate the definite integrals

$$\int_0^{\frac{\pi}{2}} \cos^2 x dx$$



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951. Evaluate the definite integrals: $\int_2^3 \frac{xdx}{x^2 + 1}$



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952. Evaluate the definite integrals

$$\int_0^1 \frac{2x + 3}{5x^2 + 1}$$



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953. Evaluate the definite integrals :

$$\int_0^1 x^2 e^{x^3} dx$$



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954. Evaluate the definite integrals

$$\int_1^2 \frac{5x^2}{x^2 + 4x + 3} dx$$



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955. Evaluate the definite integrals :

$$\int_0^{\pi/4} (2\sec^2 x + x^3 + 2) dx$$



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956. Evaluate the definite integrals :

$$\int_0^{\pi} \left(\sin^2\left(\frac{x}{2}\right) - \cos^2\left(\frac{x}{2}\right) \right) dx$$



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957. Evaluate the definite integrals :

$$\int_0^2 \frac{6x + 3}{x^2 + 4} dx$$



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958. Evaluate the definite integrals

$$\int_0^1 \left(xe^x + \frac{\sin(\pi x)}{4} \right) dx$$



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959. $\int_1^{\sqrt{3}} \frac{dx}{1+x^2}$ equals :

A. $\frac{\pi}{3}$

B. $\frac{2\pi}{3}$

C. $\frac{\pi}{6}$

D. $\frac{\pi}{12}$



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960. $\int_1^{\frac{2}{3}} \frac{dx}{4 + 9x^2}$ equals :

A. $\frac{\pi}{6}$

B. $\frac{\pi}{12}$

C. $\frac{\pi}{24}$

D. $\frac{\pi}{4}$



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961. Evaluate the following integrals: $\int_0^1 \frac{x}{x^2 + 1} dx$

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$$962. \int_0^{\frac{\pi}{2}} \sqrt{\sin x} \cos^5 x dx.$$

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$$963. \int_0^1 \sin^{-1} \left(\frac{2x}{1+x^2} \right) dx$$

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964. Evaluate the integrals

$$\int_0^5 x \sqrt{x+5} dx$$



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965. Evaluate: $\int_0^{\pi} \frac{x \sin x}{1 + \cos^2 x} dx$



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966. $\int_0^2 \frac{dx}{4 + x - x^2}$



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967. Evaluate the definite integrals :

$$\int_{-1}^1 \frac{1}{x^2 + 2x + 5} dx$$



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968. Evaluate the following integrals.

$$\int_1^2 \left(\frac{1}{x} - \frac{1}{2x^2} \right) e^{2x} dx$$

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969. The value of the integral $\int_{\frac{1}{3}}^1 \frac{(x - x^3)^{\frac{1}{3}}}{x^4} dx$ is :

A. 6

B. 0

C. 3

D. 4



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970. If $f(x) = \int_0^x t \sin t dt$, then $f'(x)$ is :

A. $\cos x + x \sin x$

B. $x \sin x$

C. $x \cos x$

D. $\sin x + x \cos x$



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971. Evaluate:

$$\int_0^{\pi/2} \cos^2 x dx.$$



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972. Evaluate the following integrals:

$$\int_0^{\pi/2} \frac{\sqrt{\sin x}}{\sqrt{\sin x} + \sqrt{\cos x}} dx$$



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973. Evaluate the following integrals:

$$\int_0^{\pi/2} \frac{\sin^{3/2} x}{\sin^{3/2} x + \cos^{3/2} x} dx$$





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974. Evaluate the following integrals:

$$\int_0^{\pi/2} \frac{\cos^5 x}{\sin^5 x + \cos^5 x} dx$$



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975. By using properties of definite integrals, evaluate the following:

$$\int_0^5 -5|x + 2| dx$$



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976. By using the properties of definite integrals,

evaluate the integral: $\int_2^8 |x - 5| dx$



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977. By using properties of definite integrals, evaluate

the following:

$$\int_0^1 x(1 - x)^n dx$$



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978. Evaluate the integrals

$$\int_0^{\frac{\pi}{4}} (\log(1 + \tan x)) dx$$



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979. By using the properties of definite integrals,

evaluate the integral: $\int_0^2 x\sqrt{2-x} dx$



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980. Evaluate the following:

$$\int_0^{\pi/2} (2\log \sin x - \log \sin 2x) dx$$



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981. By using the properties of definite integrals, evaluate the integrals:

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin^2 x dx$$



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982. Evaluate

$$\int_0^{\pi} \frac{xdx}{1 + \sin x}$$



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983. Evaluate the following:

$$\int_0^{\pi/2} -\pi/2 \sin^7 x dx$$



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984. By using the properties of definite integrals, evaluate the integrals:

$$\int_0^{2\pi} \cos^5 x dx$$



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985. Evaluate the following integrals:

$$\int_0^{\pi/2} \frac{\sin x - \cos x}{1 + \sin x \cos x} dx$$



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986. By using the properties of definite integrals,

evaluate the integral: $\int_0^{\pi} (\log(1 + \cos x)) dx$



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987. Evaluate the following integrals:

$$\int_0^a \frac{\sqrt{x}}{\sqrt{x} + \sqrt{a-x}} dx$$



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988. Evaluate the integrals

4

$$\int_0^4 |x - 1| dx$$



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989. Show that $\int_0^a f(x)g(x)dx = 2\int_0^a f(x)dx$, if f and g are defined as $f(x) = f(a - x)$ and $g(x) + g(a - x) = 4$



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990. The value of $\int_{-\pi/2}^{\pi/2} (x^3 + x \cos x + \tan^5 x + 1) dx$ is :

A. 0

B. 2

C. π

D. 1



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991. The value of $\int_0^{\pi/2} \log\left(\frac{4 + 3\sin x}{4 + 3\cos x}\right) dx$ is

A. 2

B. $\frac{3}{4}$

C. 0

D. -2



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992. Integrate the function: $\frac{1}{x - x^3}$



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993. Integrate the function: $\frac{1}{\sqrt{x+a} + \sqrt{x+b}}$



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994. Evaluate the following integrals : $\int \frac{dx}{x\sqrt{ax - x^2}}$

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995. Integrate the following functions w.r.t. x ,

$$\frac{1}{x^2(x^4 + 1)^{\frac{3}{4}}}$$

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996. Integrate the following functions w.r.t. x ,

$$\frac{1}{x^2} + x^{\frac{1}{3}}$$

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997. Integrate the following functions w.r.t. x ,

$$\frac{1}{x^2(x^4 + 1)^{\frac{3}{4}}}$$



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998. Integrate the following functions w.r.t. x ,

$$\frac{\sin x}{\sin(x - a)}$$



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999. Integrate the function: $\frac{e^{5\log x} - e^{4\log x}}{e^{3\log x} - e^{2\log x}}$



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1000. Integrate the following functions w.r.t. x ,

$$\frac{\cos x}{\sqrt{4 - \sin^2 x}}$$



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1001. Integrate the following functions w.r.t. x ,

$$\frac{\sin^8 x - \cos^8 x}{1 - 2\sin^2 x \cos^2 x}$$



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1002. Compute the following integrals:

$$\int \frac{1}{\cos(x+a)\cos(x+b)} dx$$

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1003. Integrate the following functions w.r.t. x ,

$$\frac{x^3}{\sqrt{1-x^8}}$$

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1004. Integrate the following functions w.r.t. x ,

$$\frac{e^x}{(1+e^x)(2+e^x)}$$



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1005. Integrate the function: $\frac{1}{(x^2 + 1)(x^2 + 4)}$



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1006. Differentiate the following functions w.r.t.x :

$$e^x \cos^3 x \sin^4 x$$



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1007. Compute the following integrals:

$$\int e^{3\log x} (x^4 + 1)^{-1} dx$$

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1008. Integrate the function: $f(ax + b)[f(ax + b)]^n$

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1009. Evaluate $\int \frac{1}{\sqrt{\sin^3 x \sin(x + \alpha)}} dx$.

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1010. Integrate the function:

$$\frac{\sin^{-1}\sqrt{x} - \cos^{-1}\sqrt{x}}{\sin^{-1}\sqrt{x} + \cos^{-1}\sqrt{x}}, (x \in [0, 1])$$

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1011. Integrate the function: $\sqrt{\frac{1 - \sqrt{x}}{1 + \sqrt{x}}}$

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1012. Evaluate the following integrals:

$$\int \left(\frac{2 + \sin 2x}{1 + \cos 2x} \right) e^x dx$$

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1013. Prove that the following functions are continuous:

$$\frac{x^2 + x + 1}{(x - 1)(x - 2)}$$



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1014. Integrate the function: $\tan^{-1} \sqrt{\frac{1-x}{1+x}}$



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1015. Integrate the function:

$$\frac{\sqrt{x^2 + 1} \left[\log(x^2 + 1) - 2\log x \right]}{x^4}$$

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1016. Evaluate the following integrals.

$$\int_{\pi/2}^{\pi} e^x \frac{1 - \sin x}{1 - \cos x} dx$$

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1017. Evaluate the following integrals :

$$\int_0^{\pi/4} \frac{\sin x \cdot \cos x}{\cos^4 x + \sin^4 x} dx$$

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1018. Evaluate: $\int_0^{\pi/2} \frac{\cos^2 x}{\cos^2 x + 4\sin^2 x} dx$

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1019. Evaluate:

$$\int_{\pi/6}^{\pi/3} \frac{\sin x + \cos x}{\sqrt{\sin 2x}} dx.$$

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1020. Evaluate the definite integrals

$$\int_0^1 \frac{dx}{\sqrt{1+x} - \sqrt{x}}$$

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1021. Evaluate the following integrals : $\int_0^{\pi/4} \frac{\sin x + \cos x}{9 + 16\sin 2x}$

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1022. Evaluate the definite integrals :

$$\int_0^{\frac{\pi}{2}} \sin 2x \tan^{-1}(\sin x) dx$$

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1023. Evaluate the definite integrals :

$$\int_0^{\pi} \frac{x \tan x}{\sec x + \tan x} dx$$



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1024. Evaluate the definite integrals :

$$\int_1^4 |x - 1| + |x - 2| + |x - 3| dx$$



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1025. Prove that following:

$$\int_1^3 \frac{dx}{x^2(x+1)} = \frac{2}{3} + \frac{\log(2)}{3}$$

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1026. Prove that following: $\int_0^1 xe^x dx = 1$

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1027. Prove that following:

$$\int_0^1 -1x^{17} \cos^4 x dx$$

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$$1028. \int_0^{\pi/2} \sin^3 x dx$$



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$$1029. \int_0^{\pi/4} 2 \tan^3 x dx$$



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1030. Prove that following:

$$\int_0^1 \sin^{-1} x dx = \left(\frac{\pi}{2} \right) - 1$$



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1031. Evaluate $\int_0^1 e^{2-3x} dx$ as a limit of a sum.

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1032. $\int \frac{dx}{e^x + e^{-x}}$ is equal to:

A. $\tan^{-1}(e^x) + C$

B. $\tan^{-1}(e^{-x}) + C$

C. $\log(e^x - e^{-x}) + C$

D. $\log(e^x + e^{-x}) + C$

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1033. $\int \left(\frac{\cos 2x}{(\sin x + \cos x)^2} \right) dx$ is equal to:

A. $-\frac{1}{(\sin x + \cos x)^2}$

B. $\log|\sin x + \cos x| + C$

C. $\log|\sin x - \cos x| + C$

D. $\frac{1}{(\sin x + \cos x)^2}$.

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1034. If $f(a+b-x)=f(x)$, then prove that

$$\int_a^b axf(x)dx = \frac{a+b}{2} \int_a^b af(x)dx.$$

A. $\frac{a + b}{2} \int af(b - x)dx$

B. $\frac{a + b}{2} \int af(b + x)dx$

C. $\frac{b - a}{2} \int af(x)dx$

D. $\frac{a + b}{2} \int af(x)dx.$



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1035. The value of $\int_0^1 \tan^{-1} \left(\frac{2x - 1}{1 + x - x^2} \right) dx$ is:

A. 1

B. 0

C. -1

D. $\frac{\pi}{4}$

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1036. Fill ups:

$\int \frac{\sin x}{\cos^2 x} dx$ is equal to..... .

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1037. Find : $\int \frac{\sin^6 x}{\cos^8 x} dx$.

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1038. Fill ups:

$\int e^{-3\log x} dx$ is equal to..... .



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1039. Find: $\int xe^x dx$



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1040. $\int_{-a}^a f(x) dx = 0$ if f is an function.



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1041. If $f(a - x) = -f(x)$, then $\int_0^{2a} f(x)dx = 0$

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1042. Fill ups:

The value of $\int_{-\pi}^{\pi} \sin^3 x \cos^2 x dx$ is equal to..... .

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1043. Fill ups:

If f is an odd function and g is an even function, then

$\int_{-a}^a f(x)g(x)dx$ is equal to..... .

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1044. If $\int_0^a \frac{1}{1+4x^2} dx = \frac{\pi}{8}$, then a =

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1045. $\int \frac{dx}{e^x + e^{-x}}$ is equal to:

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1046. Fill ups:

The value of $\int_0^{\frac{\pi}{2}} \frac{\sin^n x}{\sin^n x + \cos^n x} dx$ is equal to.....

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1047. Prove that: $\int_a^b \frac{f(x)}{f(x) + f(a + b - x)} dx = \frac{b - a}{2}$

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1048. Evaluate $\int \frac{(x^2 - 3)e^x}{(x + 3)^2} dx$.

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1049. Fill ups:

$\int x \frac{e^x}{(x + 1)^2} dx$ is equal to.....

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1050. Fill ups:

$$\int_0^{\frac{\pi}{2}} \cos x \left(e^{\sin x} dx \right) \text{ is equal to..... .}$$



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1051. Fill ups:

$$\int \frac{\sin x}{3 + 4\cos^2 x} dx \text{ is equal to.....}$$



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1052. Fill ups:

$$\int \frac{x^2}{x-1} dx \text{ is equal to..... .}$$



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1053. Fill ups:

$$\int \frac{1}{x^2 - 4x + 3} dx \text{ is equal to..... .}$$



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1054. Fill ups:

$$\int \sqrt{3-4x} dx \text{ is equal to..... .}$$



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1055. Fill ups:

$$\int_0^{\frac{\pi}{2}} \sin^n x dx = k \int_0^{\frac{\pi}{2}} \cos^n x dx, \text{ then } k \text{ is equal to } \dots\dots\dots .$$

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1056. Fill ups:

$$\int_0^{\frac{\pi}{4}} \frac{|\sin x - \cos x|}{\sin x - \cos x} dx \text{ is equal to } \dots\dots\dots$$

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1057. True or False:

Identifinite integral of a function, if its exists, is always unique.



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1058. True or False:

$$\int \frac{1}{\sqrt{1-x^2}} dx = \sin^{-1}x \text{ and also } \int \frac{1}{\sqrt{1-x^2}} dx = -\cos^{-1}x$$



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1059. True or False: $\int x^n dx = \frac{x^{n+1}}{n+1} + C$, where n is any integer.



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1060. True or False: $\int |x| dx = \pm \frac{x^2}{2} + C$



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1061. True or False:

$$\int \frac{1}{2x} dx = \frac{1}{2} \log|x| + C \text{ and } \int \frac{1}{2x} dx = \frac{1}{2} \log|2x| + C$$



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1062. True or False:

$$\int_a^b af(x)dx \neq \int_a^b af(a + b - x)dx$$



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1063. True or False: $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin^3 x dx = 0$.



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1064. True or False:

$\int_a^b af(x)dx$, if it exists, is a uniquely determined real number.



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1065. True or False:

$$\int_0^{\frac{\pi}{2}} \log|\sin x| dx \neq \int_0^{\frac{\pi}{2}} \log(\cos x) dx.$$



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1066. True or False:

$$\text{If } f(2a - x) = -f(x), \text{ then } \int_0^{2a} f(x) dx = 0.$$



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1067. True or False:

If f is an odd function defined on an interval $[-a, a]$, a ne

0, then $\int_{-a}^a f(x) dx = 0$.



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1068. True or False:

If f is a periodic function with period p , then $\int_a^{a+p} f(x) dx$
is independent of 'a'.



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1069. True or False:

$$\int_0^{2\pi} \sin^2 x dx = 4 \int_0^{\frac{\pi}{2}} \sin^2 x dx$$



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1070. True or False:

$$\int_0^{\pi} \cos^2 x dx \neq 2 \int_0^{\frac{\pi}{2}} \sin^2 x dx$$



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1071. True or False:

$$\int \tan^{-1} x dx = x \tan^{-1} x - \frac{1}{2} \log(1 + x^2) + C.$$



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1072. True or False:

$$\int_0^{\frac{\pi}{2}} \frac{\sin^6 x}{\sin^6 x + \cos^6 x} dx = \frac{\pi}{4}$$



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1073. True or False:

$$\int_a^b \frac{f(x)}{f(x) + f(a + b - x)} dx = \frac{a + b}{2}$$



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1074. True or False:

$$\int \frac{1}{1-2x} dx = -\frac{1}{2} \log|2x-1| + C \quad \text{and} \quad \text{also}$$

$$\int \frac{1}{1-2x} dx = -\frac{1}{2} \log \left| x - \frac{1}{2} \right| + C.$$



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1075. True or False:

$$\int_0^{\pi} x \sin x dx \neq \pi$$



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1076. True or False:

$$\int_0^{\frac{\pi}{2}} x(\sin x + \cos x) dx = \frac{\pi}{2}$$

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1077. True or False:

$$\int (x + 1)^2 dx = \frac{(x + 1)^3}{3} + C \quad \text{and} \quad \text{also}$$

$$\int (x + 1)^2 dx = \frac{1}{3}x^3 + x^2 + x + C.$$

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1078. True or False:

$$\int_0^{\pi} \cos^5 x dx \neq 0$$



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1079. $\int \frac{x - \sin x}{1 - \cos x} dx$



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1080. True or False:

$$\int \frac{1 + \cos x}{x + \sin x} dx = \log|1 + \cos x| + C$$



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1081. True or False:

$$\int \frac{2x + 1 + \cos x}{x^2 + x + \sin x} dx = \log |x^2 + x + \sin x| + C.$$



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1082. Match the statements given in column I with those given in column II.

Column I

1. $\int \log x \, dx =$
2. $\int_0^{\pi/2} \log(\tan x) \, dx =$
3. $\int_0^{\pi/2} \sin^2 x \, dx =$
4. $\int \frac{1}{1+x^2} \, dx =$
5. $\int_0^{\pi/2} \sin^3 x \, dx =$
6. $\int \frac{1}{e^x - 1} \, dx =$
7. $\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x} \, dx =$
8. $\int x\sqrt{x+1} \, dx =$
9. $\int \frac{1}{1+\cos x} \, dx =$
10. $\int_0^{\pi/2} \sin^2 x \cos x \, dx =$

Column II

- (p) $-\cot^{-1} x$
- (q) $\int_0^{\pi/2} \sin x \sin 2x \, dx$
- (r) $\log |1 - e^{-x}|$
- (s) $\int_0^{\pi/2} \frac{\tan^2 x}{\tan^2 x + \cot^2 x} \, dx$
- (t) $\frac{2x}{3}(x+1)^{3/2} - \frac{4}{15}(x+1)^{5/2}$
- (u) $\frac{\sin x}{1 + \cos x}$
- (v) $\int_0^{\pi/2} \cos^2 x \sin x \, dx$
- (w) $\int_0^{\pi/2} \cos^2 x \, dx$
- (x) $x(\log x - 1)$
- (y) $\int_0^{\pi/2} \log(\cot x) \, dx$



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1083. If $\frac{d}{dx}(\phi(x)) = f(x)$, then

A. $\int f(x)dx = \phi'(x)$

B. $\int f(x)dx = \phi(x)$

C. $\int f(x) = \phi(x) + C, C \in R$

D. None of these



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1084. If $\int f(x)dx = g(x) + C$ then

A. $g(x)=f(x)$

B. $\frac{d}{dx}(g(x)) = f(x)$

C. $\frac{d}{dx}f(x) = g(x) + C$, then

D. None of these



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1085. $\frac{d}{dx} \left(\int f(x) dx \right) =$

A. $f'(x)$

B. $\frac{1}{2}(f(x))^2$

C. $f(x)$

D. None of these



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1086. One value of $\int f'(x)dx$ is

A. $f'(x)$

B. $\frac{1}{2}(f(x))^2$

C. $\frac{1}{f(x)}$

D. $f(x)$



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1087. Evaluate $\int x^{-1}dx$

A. $\frac{x^0}{0}$

B. $\log_e x$

C. $\log_{10} x$

D. $\log_e |x|$



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1088. Which of the following is not equal to $\int \frac{1}{\sqrt{1-x^2}} dx$

?

A. $\sin^{-1} x$

B. $-\cos^{-1} x$

C. $\frac{\pi}{2} - \cos^{-1} x$

D. None of these



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1089. $\int e^x(f(x) + f'(x))dx$ is equal to :

A. $e^x f'(x) + C$

B. $e^x f(x) + C$

C. $e^x + f(x) + C$

D. None of these



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1090. $\int e^x(\cos x - \sin x)dx =$

A. $e^x \sin x + C$

B. $e^x \cos x + C$

C. $-e^x \cos x + C$

D. $-e^x \sin x + C$



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1091. Evaluate

$$\int \frac{dx}{\sin^2 x \cos^2 x}$$

A. $\tan x + \cot x + C$

B. $(\tan x + \cot x)^2 + C$

C. $\tan x - \cot x + C$

D. $(\tan x - \cot x)^2 + C$



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1092. $\int 2^x (f(x) + f(x)\log 2) dx$ is equal to:

A. $2^x f(x) + C$

B. $2^{xf}(x) + C$

C. $(2^x \log 2) f(x) + C$

D. None of these



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1093. $\int \frac{x - 1}{x(x - \log x)} dx$

A. $\frac{1}{x - \log x} + C$

B. $\log(x - \log x) + C$

C. $\log|x - \log x| + C$

D. None of these



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1094. Which of the following is not equal to

$$\int \tan x \sec^2 x dx?$$

A. $\frac{1}{2} \tan^2 x$

B. $\frac{1}{2} \sec^2 x$

C. $\frac{1}{2} \cos^2 x$

D. None of these



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1095. If $\int \frac{(3e^x - 5e^{-x})}{4e^x + 5e^{-x}} dx = ax + b \log(4e^x + 5e^{-x}) + C,$

then

A. $a = -\frac{1}{8}, b = \frac{7}{8}$

B. $a = \frac{1}{8}, b = \frac{7}{8}$

C. $a = -\frac{1}{8}, b = -\frac{7}{8}$

D. $a = \frac{1}{8}, b = -\frac{7}{8}$



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1096. $\int \frac{\cos 2x - \cos 2\theta}{\cos x - \cos \theta} dx$ is equal to

A. $2(\sin x + x \cos \theta) + C$

B. $2(\sin x - x \cos \theta) + C$

C. $2(\sin x + 2x \cos \theta) + C$

D. $2(\sin x - 2x \cos \theta) + C$



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1097. If $\int g(x) dx = g(x)$, then $\int g(x) \left(\frac{x-1}{(1+x)^3} \right) dx$ is equal

to

A. $\frac{g(x)}{(1+x)^2}$

B. $\frac{2xg(x)}{(1+x^2)^2}$

C. $\left(-\frac{g(x)}{1+x^2}\right)$

D. None of these



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1098. $\int \frac{\log(x) - \log(x+1)}{x(x+1)} dx$ is equal to

A. $\log\left(\frac{x}{x+1}\right) + C$

B. $\frac{1}{2} \left\{ \log\left(\frac{x}{x+1}\right) \right\}^2$

$$C. \log \left\{ \frac{1}{2} \left(\frac{x}{x+1} \right)^2 \right\}$$

D. None of these



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1099. $\int \frac{\cos\sqrt{x}}{\sqrt{x}} dx$ is equal to

A. $2\cos\sqrt{x}$

B. $\sqrt{\frac{\cos x}{x}}$

C. $\sin\sqrt{x}$

D. $2\sin\sqrt{x}$



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1100. $\int \tan^{-1}(\sqrt{x}) dx$

A. $(x + 1)\tan^{-1}\sqrt{x} + \sqrt{x} + C$

B. $x \tan^{-1}\sqrt{x} - \sqrt{x} + C$

C. $-\frac{g(x)}{1 + x^2}$

D. None of these



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$$1101. \int \frac{1 - \cos 2x}{1 + \cos 2x} dx =$$

A. $\tan x - x + C$

B. $x + \tan x + C$

C. $x - \tan x + C$

D. $-x - \cot x + C$



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$$1102. \int_0^{b+c} a + bf(x) dx \text{ is equal to}$$

A. a) $\int_0^c af(x - b) dx$

$$B. b) \int_a^c af(x + b)dx$$

$$C. c) \int_a^b af(x)dx$$

$$D. d) \int_a^{b-c} a-cf(x)dx$$



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1103. If f and g are continuous functions in $[0, 1]$ satisfying $f(x) = f(a - x)$ and $g(x) + g(a - x) = a$, then

$\int_0^a f(x) \cdot g(x)dx$ is equal to

A. $\frac{a}{2}$

B. $\frac{a^a}{2} \int_0^a f(x)dx$

$$C. \int_a^a f(x) dx$$

$$D. a \int_a^a f(x) dx$$



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1104. $\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \frac{dx}{1 + \cos 2x}$ is equal to:

A. 1

B. 2

C. 3

D. 4



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1105. $\int_0^{\frac{\pi}{2}} \sqrt{1 - \sin 2x} dx$ is equal to

A. $2\sqrt{2}$

B. $2(2\sqrt{2} + 1)$

C. 2

D. $2(\sqrt{2} - 1)$



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1106. If $\int_0^1 \frac{e^t}{1+t} dt = a$, then $\int_0^1 \frac{e^t}{(1+t)^2} dt$ is equal to

A. $a - 1 + \frac{e}{2}$

B. $a + 1 - \frac{e}{2}$

C. $a - 1 - \frac{e}{2}$

D. $a + 1 + \frac{e}{2}$



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1107. The value of $\int x \log x (\log x - 1) dx$ is equal to

A. $2(x \log x - x)^2 + C$

B. $\frac{1}{2}(x \log x - x)^2 + C$

C. $(x \log x)^2 + C$

D. None of these



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1108. $\int_0^{\infty} \frac{1}{1 + e^x} dx =$

A. $\log 2 - 1$

B. $\log 4 - 1$

C. $\log 2$

D. $-\log 2$



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1109. Evaluate the following integrals:

$$\int_0^a \frac{\sqrt{x}}{\sqrt{x} + \sqrt{a-x}} dx$$

A. a

B. $\frac{a}{2}$

C. $2a$

D. 0



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$$1110. \int_{\frac{\pi}{6}}^{\frac{\pi}{3}} \frac{\sqrt{\cos x}}{\sqrt{\sin x} + \sqrt{\cos x}} dx =$$

A. $\frac{\pi}{3}$

B. $\frac{\pi}{6}$

C. $\frac{\pi}{12}$

D. 0



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1111. If $x = \int_0^y \frac{dt}{\sqrt{1+9t^2}}$ and $\frac{d^2y}{dx^2} = ay$, then a is equal to

A. 3

B. 6

C. 9

D. 1



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1112. $\int_{-1}^1 \frac{x^3 + |x| + 1}{x^2 + 2|x| + 1} dx$ is equal to

A. $\log 2$

B. $2\log 2$

C. $\frac{1}{2}\log 2$

D. $4 \log 2$



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1113. $\int \frac{x^9}{(4x^2 + 1)^6} dx$ is equal to

A. $\frac{1}{5}x \left(4 + \frac{1}{x^2}\right)^{-5}$

B. $\frac{1}{5} \left(4 + \frac{1}{x^2}\right)^{-5} + C$

C. $\frac{1}{10x} (1 + 4)^{-5} + C$

D. $\frac{1}{10} \left(\frac{1}{x^2} + 4\right)^{-5} + C$



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$$1114. \int_0^{\pi} \frac{\sin x - \cos x}{\sqrt{1 - \sin 2x}} dx =$$

A. $\frac{\pi}{4}$

B. $-\frac{\pi}{4}$

C. $\pm \frac{\pi}{4}$

D. None of these



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1115. $\int \frac{x^3}{x+1}$ is equal to

A. $x + \frac{x^2}{2} + \frac{x^2}{3} - \log|1-x| + C$

B. $x + \frac{x^2}{2} - \frac{x^3}{3} - \log|1-x| + C$

C. $x - \frac{x^2}{2} - \frac{x^3}{3} - \log|1+x| + C$

D. $x - \frac{x^2}{2} + \frac{x^3}{3} - \log|1+x| + C$



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1116. $\int \frac{x + \sin x}{1 + \cos x} dx$ is equal to

A. $\log(1 + \cos x) + C$

B. $\log|x + \sin x| + C$

C. $x - \frac{\tan x}{2} + C$

D. $x \frac{\tan x}{2} + C$



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1117. If $\int \frac{x^3 dx}{\sqrt{1+x^2}} = a \frac{(1+x^2)^3}{2} + b\sqrt{1+x^2} + C$, then

A. $a = \frac{1}{3}, b = -1$

B. $a = -\frac{1}{3}, b = 1$

C. $a = -\frac{1}{3}, b = -1$

D. $a = \frac{1}{3}, b = 1$



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1118. $\int_0^2 [x] dx =$

A. 2

B. 1

C. $\frac{1}{2}$

D. 0



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3.5
1119. $\int 0.2[x]dx =$

A. 3.3

B. 3.7

C. 1.65

D. 4.5



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1120. The primitive of the function:

$$f(x) = \left(1 + \frac{1}{x^2}\right)a^{x - \frac{1}{x}}, a > 0 \text{ is}$$

A. $\frac{a^{x - \frac{1}{x}}}{\log_e a} + c$

B. $\frac{\log_e \left(a^{1+x} - \frac{1}{x}\right)}{11} + C$

C. $\frac{\tan 11x}{11} + C$

D. None of these



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1121. $\int \frac{\sin^{10}x}{\cos^{12}x} dx =$

A. $10\tan^9x + C$

B. $\frac{\tan^{11}x}{11} + C$

C. $\frac{\tan 11x}{11} + C$

D. None of these



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1122.

If

$$\int \frac{dx}{(x+2)(x^2+1)} = a \log|1+x^2| + b \tan^{-1}x + \frac{1}{5} \log|x+2| + c$$

, then

A. $a = -\frac{1}{10}, b = -\frac{2}{5}$

B. $a = \frac{1}{10}, b = -\frac{2}{5}$

C. $a = -\frac{1}{10}, b = \frac{2}{5}$

D. $a = \frac{1}{10}, b = \frac{2}{5}$



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1123. $\int_{-2}^2 |x \cos(\pi x)| dx$ is equal to

A. $\frac{8}{\pi}$

B. $\frac{4}{\pi}$

C. $\frac{2}{\pi}$

D. $\frac{1}{\pi}$



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1124. Integration of $\frac{1}{1} + (\log_e x)^2$ w.r.t $\log_e x$ is

A. $\tan^{-1} x$

B. $\frac{\tan^{-1}(\log_e x)}{x}$

C. $\tan^{-1}(\log_e x)$

D. None of these



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1125. Evaluate: $\int x^x(1 + \log x)dx$

A. $x^9x + 1 \frac{)}{x + 1}$

B. $x^x \log x$

C. $\frac{x^x}{\log x}$

D. x^x



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1126. $\int_0^{\infty} \frac{x}{(1+x)(1+x^2)} dx =$

A. $\frac{\pi}{2}$

B. $\frac{\pi}{4}$

C. $\frac{\pi}{4}$

D. None of these



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