



## MATHS

### BOOKS - KC SINHA ENGLISH

### INDEFINITE INTEGRALS - FOR BOARDS

#### Solved Examples

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



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2. if  $\int (\sin 2x - \cos 2x) dx = \frac{1}{\sqrt{2}} \sin(2x - k) + c$  then  $k = ?$



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3. If  $f'(x) = x + \frac{1}{x}$  &  $f(1) = 5/2$  then  $f(x) = ?$

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

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5. Evaluate: (i)  $\int \frac{2x+1}{\sqrt{3x+2}} dx$  (ii)  $\int \frac{3x+5}{\sqrt{7x+9}} dx$

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

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7. Find the integral  $\int \frac{\sec^2 x}{\cos e c^2 x} dx$



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8. Evaluate:  $\int \sin^4 2x \, dx$



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9. Evaluate:  $\int \sqrt{1 - \sin 2x} \, dx$



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



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



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12. Evaluate  $\int \sin 3x \cos 5x \, dx$

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13. Find  $\int \sin^3 x \cos\left(\frac{x}{2}\right) dx$

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14.  $\int \tan^{-1} \sqrt{\frac{1-\sin x}{1+\sin x}} dx, -\pi/2$

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15. Evaluate:  $\int \frac{\cos 5x + \cos 4x}{1 - 2 \cos 3x} dx$

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16. Evaluate  $\int a^{3x+3} dx, a > 0$



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17. Write a value of  $\int (e^{x(\log)_e a} + e^{a(\log)_e x}) dx$



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18. Evaluate:  $\int \frac{8^{1+x} + 4^{1-x}}{2^x} dx$



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19. Evaluate:  $\int \frac{1}{(\sqrt{x+a}-\sqrt{x+b})} dx$



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20. Find  $\int x^2 \sqrt{ax + b} dx$



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21. Evaluate:  $\int \frac{x}{\sqrt{x+4}} dx$  (ii)  $\int \frac{2-3x}{\sqrt{1+3x}} dx$

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22. Evaluate  $\int x(1-x)^{2/3} dx$

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

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

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25. Evaluate:  $\int \cos^3 x \sqrt{\sin x} dx$



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26. Evaluate:  $\int \sin^3 x \cos^2 x dx$



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27. Evaluate:  $\int \frac{1}{\sin x \cos^3 x} dx$



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28. Evaluate  $\int \sin^4 x dx$ .



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29. Find  $\int \tan^n x \sec^2 x dx, (n \neq -1)$



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30. Evaluate:  $\int \sec^4 x \, dx$

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31.  $\int \tan x \, dx$

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32. Evaluate:  $\int \tan^3 x \, dx$

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33. The value of  $\int \tan^3 2x \sec 2x \, dx$  is equal to:

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34. Evaluate  $\int \operatorname{cosec}^4 x \, dx$



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35.  $\int \cot^3 x \cos e c^4 x dx$



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36. Evaluate:  $\int \frac{1}{\sqrt{1 + \cos 2x}} dx$



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



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38. Evaluate:  $\int \{1 + 2 \tan x (\tan x + \sec x)\}^{\frac{1}{2}} dx$



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

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40. Evaluate: (i)  $\int \frac{\sin(x - a)}{\sin(x - b)} dx$  (ii)  $\int \frac{\sin(x - \alpha)}{\sin(x + \alpha)} dx$

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41. about to only mathematics

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42. Evaluate  $\int x \cos ecx^2 \cot x^2 dx$

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43. Find  $\int \frac{e^x(1 + x)}{\cos^2(xe^x)} dx$



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



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45. Evaluate  $\int \sqrt{2 + \sin 3t} \cos 3t dt$



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



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47. Evaluate:  $\int (\tan x - x) \tan^2 x dx$



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48. Evaluate:  $\int \frac{x^5}{\sqrt{1+x^3}} dx$

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

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50. Evaluate: (i)  $\int \frac{(\sin^{-1} x)^3}{\sqrt{1-x^2}} dx$  (ii)  $\int \left( \frac{\sin(2 + 3 \log x)}{x} \right) dx$

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

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52. Evaluate:  $\int \frac{1}{e^x + e^{-x}} dx$

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

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

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55. Evaluate  $\int \frac{\log\left(1 + \frac{1}{x}\right)}{x(1+x)} dx$

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

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57. Evaluate  $\int \frac{\sec^2 x \tan x}{\sec^2 x + \tan^2 x} dx$

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

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

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60. Evaluate the following integrals.

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

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

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62. Evaluate:  $\int \sqrt{a^2 - x^2} dx$

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63. Evaluate:  $\int \frac{1}{(a^2 + x^2)^{\frac{3}{2}}} dx$

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64. Evaluate: (i)  $\int \frac{(\sin^{-1} x)^3}{\sqrt{1-x^2}} dx$  (ii)  $\int \left( \frac{\sin(2 + 3 \log x)}{x} \right) dx$

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65. Evaluate  $\int \frac{dx}{a^2 + x^2}$

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66. Evaluate  $\int \frac{x^3}{1+x^8} dx$

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67.

If  $y = \int \frac{dx}{(1+x^2)^{\frac{3}{2}}}$  and  $y = 0$  when  $x = 0$ , the value of  $y$  when  $x = 1$  is

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

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69. Evaluate:  $\int \frac{1}{x \sqrt{x^4 - 1}} dx$

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70. Evaluate  $\int \frac{e^x}{\sqrt{e^{2x} - 4}}$

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

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



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73. Evaluate  $\int \frac{dx}{\sqrt{(x-a)(b-x)}}$



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74. Evaluate  $\int x e^x dx$



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75. Evaluate  $\int x \sin 3x dx$



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76. Evaluate  $\int x \cos^2 x dx$



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77. Evaluate  $\int \cos \sqrt{x} dx$

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78. Evaluate:  $\int x / (\sqrt{x+a} - \sqrt{x+b}) dx$

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79. Evaluate  $\int \log x dx$

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

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81. Evaluate: (i)  $\int x \tan^{-1} x dx$



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



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83. Evaluate:  $\int \sec^3 x dx$



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84. Evaluate  $\int \sqrt{4-x^2} dx$



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85. Evaluate  $\int e^{ax} \sin bx dx$



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86. Evaluate:  $\int (1+x)\log x dx$

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

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88. Evaluate:  $\int \frac{\sin^{-1} x}{x^2} dx$

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89. Evaluate  $\int \frac{\log x}{x^3} dx$

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90. Find  $\int \cos 2x \cdot \log\left(\frac{\cos x + \sin x}{\cos x - \sin x}\right) dx$

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91. Evaluate  $\int \frac{e^{m \tan^{-1} x}}{(1+x^2)^{\frac{3}{2}}} dx$

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92. Evaluate:  $\int \frac{\sin^{-1} \sqrt{x} - \cos^{-1} \sqrt{x}}{\sin^{-1} \sqrt{x} + \cos^{-1} \sqrt{x}} dx$

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93.  $\int \sin^{-1} \sqrt{\frac{x}{a+x}} dx$

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94. Evaluate  $\int e^{-x} \tan^{-1}(e^x) dx$

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95.  $\int \log x \cdot \sin^{-1} x dx$

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

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

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



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99. Evaluate:  $\int \left\{ \frac{1}{\log x} - \frac{1}{(\log x)^2} \right\} dx$



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



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



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



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

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104. Evaluate:  $\int \sqrt{2x^2 + 3x + 4} dx$

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105. Evaluate :  $\int \frac{e^x}{\sqrt{5 - 4e^x - e^{2x}}} dx$

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

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

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108. Evaluate  $\int \frac{dx}{a^2 - x^2}$ , where  $x < a$

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109. Evaluate  $\int \frac{dx}{x^2 - a^2}$ ,  $x > a$

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110. Evaluate the following Integrals :

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

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

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112. Evaluate  $\int \frac{dx}{x [10 + 7 \log_e x + (\log_e x)^2]}$

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113. Evaluate:  $\int \frac{\sin x}{(2 + \cos x)(5 + \cos x)} dx$

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114. Evaluate:  $\int \frac{x^2}{(1 + x^3)(2 + x^3)} dx$

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115. Evaluate:  $\int \frac{2x - 1}{(x - 1)(x + 2)(x - 3)} dx$

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

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117. Evaluate:  $\int \frac{2x}{(x^2 + 1)(x^2 + 3)} dx$

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

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

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

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121. Evaluate:  $\int \frac{x^3 + 3x + 2}{(x^2 + 1)^2(x + 1)} dx$

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

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123. Evaluate:  $\int \sqrt{\sec x - 1} dx$

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

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125. Evaluate:  $\int \frac{\sqrt{16 + (\log x)^2}}{x} dx$

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126. Evaluate:  $\int \frac{\sin x}{\sin x - \cos x} dx$

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127. Evaluate:  $\int \frac{3 \sin x + 2 \cos x}{3 \cos x + 2 \sin x} dx$

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

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## Exercise

1. Solve  $\int (x^2 - 5x + 7) dx$

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2.  $\int (ax^3 + bx^2 + cx + d) dx$

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

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

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

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$$6. \int \frac{(x - 3)^2}{\sqrt{x}} dx$$

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

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8. Find the integral  $\int \frac{x^3 + 5x^2 - 4}{x^2} dx$

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9. (i)  $\int \frac{x^3 - 1}{x^2} dx$  (ii)  $\int (x^{2/3} + 1) dx$

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10. Find the integral  $\int x^2 \left( 1 - \frac{1}{x^2} \right) dx$

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11.  $\int (1 - x)\sqrt{x} dx$

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12. Find the integral  $\int \left( \sqrt{x} - \frac{1}{\sqrt{x}} \right)^2 dx$

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13. Find the integral  $\int (2x^2 + e^x) dx$

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14. Find the integral  $\int \frac{2 - 3 \sin x}{\cos^2 x} dx$

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15. Find the integral  $\int(2x - 3 \cos x + e^x)dx$

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16. Find the integral  $\int(2x^2 - 3 \sin x + 5\sqrt{x})dx$

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17.  $\int\left(5 \cos x - 4 \sin x + \frac{1}{\cos^2 x}\right)dx$

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18.  $I = \int \frac{\sin^8 x - \cos^8 x}{1 - 2 \sin^2 x \cos^2 x} dx$  is equal to:

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



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20. Evaluate the following integral :  $\int \frac{5 \cos^3 x + 6 \sin^3 x}{2 \sin^2 x \cos^2 x} dx$



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21.  $\int \frac{e^x \sin x + \cot x + x \sin x}{\sin x} dx$



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22.  $\int \sec(11 + 12x) \tan(11 + 12x) dx$



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23. If  $\frac{dy}{dx} = \cos x + \sec^2 x$  and when  $x = 0$ ,  $y = 0$ , what is  $y$ ?



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24. Find the anti derivative F of f defined by  $f(x) = 4x^3 - 6$ , where  $F(0) = 3$

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25. 
$$\int \frac{1}{\sqrt{x+a} + \sqrt{x+b}} dx$$

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26. 
$$\int \frac{1}{\sqrt{x+3} - \sqrt{x+2}} dx$$

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27. 
$$\int \frac{dx}{\sqrt{5+3x} + \sqrt{4+3x}}$$

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

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29.  $\int \sqrt{ax + b} dx$

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30.  $\int e^{2x+3} dx$

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

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32.  $\int \sin^2(2x + 5) dx$



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33. Evaluate  $\int \cos^2 x dx$



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34.  $\int \sin^3(2x + 1) dx$



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



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



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37. Evaluate:  $\int \sec^2 x \cos e^{c^2 x} dx$ .

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38.  $\int (\cot^2 2x + \tan^2 3x) dx$

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39. Evaluate the following integrals :  $\int (\tan x + \cot x)^2 dx$

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40. Evaluate the following integrals :  $\int \frac{\sin^2 x}{1 + \cos x} dx$

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41. Integrate the functions  $\frac{\cos 2x + 2 \sin^2 x}{\cos^2 x}$



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42. Evaluate  $\int \sin^4 x dx$ .



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43.  $\int \sqrt{1 + \cos 2x} dx$



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44. Evaluate:  $\int \sqrt{1 + \sin\left(\frac{x}{2}\right)} dx$



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45. Evaluate: (i)  $\int \frac{x^3 - 3x^2 + 5x - 7 + x^2 a^x}{2x^2} dx$  (ii)  $\int \frac{\cos x}{1 + \cos x} dx$



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46. Evaluate:  $\int \frac{\sec x}{\sec x + \tan x} dx$ .

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47. If  $\int \sqrt{1 + \sin 2x} dx = \sqrt{2} \sin(x + a) + b$ , then find values of  $a$  and  $b$ .

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48.  $\int \sin 4x \cos 3x dx$

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

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50.  $\int \sin 3x \sin\left(\frac{x}{2}\right) dx$



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



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



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53.  $\int \frac{3 \cos x + 4}{\sin^2 x} dx$



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54. Evaluate :  $\int \sec^2(7 - 4x) dx$



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$$55. \int \tan^2(2x - 3) dx$$



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$$56. \quad \text{Evaluate:} \quad (i) \quad \int \sin^{-1}(\cos x) dx, \quad 0 \leq x \leq \pi \quad (ii)$$

$$\int \tan^{-1} \left\{ \sqrt{\left( \frac{1 - \cos 2x}{1 + \cos 2x} \right)} \right\} dx, \quad 0 \leq x \leq \pi/2$$



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$$57. \quad \text{Evaluate:} \quad (i) \quad \int \sin^{-1}(\cos x) dx, \quad 0 \leq x \leq \pi \quad (ii)$$

$$\int \tan^{-1} \left\{ \sqrt{\left( \frac{1 - \cos 2x}{1 + \cos 2x} \right)} \right\} dx, \quad 0 \leq x \leq \pi/2$$



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$$58. \int \cos^{-1} \left( \frac{1 - \tan^2 x}{1 + \tan^2 x} \right) dx$$



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59. Evaluate: (i)  $\int \tan^{-1} \left( \frac{\sin 2x}{1 + \cos 2x} \right) dx$  (ii)  $\int \cos^{-1}(\sin x) dx$

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60. Evaluate :  $\int \frac{e^{\log \sqrt{x}}}{x} dx$

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61.  $\int (x + 2) \sqrt{3x + 5} dx$

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62.  $\int (x - 1) \sqrt{x + 1} dx$

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$$63. \int x \sqrt{2x + 1} dx$$

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$$64. \int x(3x - 5)^4 dx$$

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$$65. \int (x + 2) \sqrt{x - 3} dx$$

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$$66. \int (ax + b) \sqrt{cx + d} dx$$

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$$67. \int x \sqrt{ax + b} dx$$



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68. Evaluate:  $\int x^2 \sqrt{x+2} dx$



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



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70.  $\int \frac{x}{\sqrt{x+5}} dx$



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



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72.  $\int \frac{x^2}{\sqrt{3x+4}} dx$  (ii)  $\int \frac{2x-1}{(x-1)^2} dx$

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

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74. Integrate the functions  $\frac{1}{x^{\frac{1}{2}} + x^{\frac{1}{3}}}$  [Hint:  $\frac{1}{x^{\frac{1}{2}} + x^{\frac{1}{3}}} = \frac{1}{x^{\frac{1}{3}}(1 + x^{\frac{1}{6}})}$ ,

put  $x = t^6$ ]

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75. Evaluate  $\int \sin^3 x dx$

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76. Evaluate:  $\int \cos^5 x dx$

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

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

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79.  $\int \sin^{\frac{3}{4}} x \cos x dx$

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80.  $\int \sin^3 x \sin 2x dx$



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

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

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83. Evaluate  $\int \frac{\cos^3 x}{\sqrt{\sin x}} dx$

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84.  $\int \frac{\sec \theta}{\tan^2 \theta} d\theta$

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85. Evaluate:  $\int \cos^3 x e^{\log \sin x} dx$

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86.  $\int \sin^3 2x dx$

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87.  $\int \cos^7 ax \sin ax dx$

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88.  $\int \frac{dx}{\sin^2 x \cos^2 x}$  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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89. Evaluate:  $\int \frac{1}{\sin^3 x \cos^5 x} dx$

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90.  $\int \sqrt{\frac{\cos x}{\sin^5 x}} dx$

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91.  $\int \frac{dx}{4 \sin 2x \cos^2 x}$

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92.  $\int \frac{\sin^6 x + \cos^6 x}{\sin^2 x \cdot \cos^2 x} dx$

(i)  $\tan x + \cot x + 3x + C$       (ii)  $\tan x + \cot x - 3x + C$

(iii)  $\tan x - \cot x - 3x + C$       (iv)  $\tan x - \cot x + 3x + C$

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93.  $\int \tan x \sec^2 x dx$

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94.  $\int \tan^5 \theta \sec^4 \theta d\theta$

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95. Evaluate:  $\int \sec^6 x dx$

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

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97. Evaluate:  $\int \sec^6 x \tan x dx$

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98. Evaluate:  $\int \sec^n x \tan x \, dx$

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99.  $\int \sec^3 x \tan x \, dx$

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100. The value of  $\int \tan^3 2x \sec 2x \, dx$  is equal to:

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101.  $\int \sec^{\frac{7}{2}} x \tan x \, dx$

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102. Evaluate:  $\int \tan^5 x dx$

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103. Evaluate:  $\int \cot^n x \csc^2 x dx, n \neq -1$

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104. Evaluate:  $\int \cot^3 x dx$

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105.  $\int \cot^4 x dx$

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



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107. Evaluate: (i)  $\int \sqrt{\frac{1 + \cos 2x}{1 - \cos 2x}} dx$  (ii)  $\int \sqrt{\frac{1 - \cos x}{1 + \cos x}} dx$



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108. Evaluate: (i)  $\int \frac{1}{\sqrt{1 - \cos 2x}} dx$  (ii)  $\int \frac{1}{\sqrt{1 + \cos x}} dx$



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109.  $\int \sec(ax + b) dx$



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110. Evaluate:  $\int \frac{dx}{\cos x - \sin x}$



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$$111. \int \frac{dx}{\cos x \sin^2 x}$$

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$$112. \int \frac{1 + \cos x}{\sin x} dx$$

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113. Evaluate the following integrals

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

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$$114. \int \frac{\sec x}{b + a \tan x} dx$$

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115.  $\int \frac{dx}{\sin x + \tan x}$

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116. Evaluate:  $\int \frac{1}{\sin x \cos^2 x} dx$

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117.  $\int \frac{dx}{\sqrt{13 + 5 \cos x - 12 \sin x}}$

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118. Find the following integrals: (i)  $\int \sin^3 x \cos^3 x dx$  (ii)  $\int \frac{\sin x}{\sin(x + a)} dx$   
(iii)  $\int \frac{1}{1 + \tan x} dx$

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

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120.  $\int \frac{\sin 2x}{\sin(x - \alpha)\sin(x + \alpha)} dx$

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

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

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$$123. \int e^x \cos(e^x + 2) dx$$



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$$124. \int \frac{\sin \sqrt{x+1}}{\sqrt{x+1}} dx$$



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$$125. \int x^2 \sec x^3 dx$$



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$$126. \int x^{\frac{1}{3}} \sin\left(x^{\frac{4}{3}}\right) dx$$



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$$127. \int \frac{\cos(\log_e x)}{x} dx$$



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$$128. \int \frac{\sec^2(\log x)}{x} dx$$



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$$129. \int \frac{\cos e^{c^2}(\log x)}{x} dx$$



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$$130. \int \frac{\tan \sqrt{x} \sec^2 \sqrt{x}}{\sqrt{x}} dx$$



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$$131. \int \frac{1}{x \cos^2(\log_e x)} dx$$



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$$132. \int e^x \tan e^x \sec e^x dx$$

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$$133. \int \frac{\sec^2 \sqrt{x+1}}{\sqrt{x+1}} dx$$

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$$134. \int \sin x \sin(\cos x) dx$$

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$$135. \text{Evaluate: (i) } \int \frac{\sin \sqrt{x}}{\sqrt{x}} dx \text{ (ii) } \int \frac{(x+1)e^x}{\sin^2(xe^x)} dx$$

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136.  $\int \frac{\cos \sqrt{ax + b}}{\sqrt{ax + b}} dx$

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

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

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

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

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141. Evaluate:  $\int \frac{\sec^2 x}{\sqrt{1 + \tan x}} dx$

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

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

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144. Evaluate:  $\int \frac{\sin x + \cos x}{\sin x - \cos x} dx$



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145. Evaluate:  $\int \frac{2 \cos x - 3 \sin x}{6 \cos x + 4 \sin x} dx$



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146. Evaluate:  $\int \frac{\sec^2 x}{\sqrt{1 - \tan^2 x}} dx$



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



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148. Choose the correct answers  $\int \frac{\cos 2x}{(\sin x + \cos x)^2} dx$  is equal (A)  $\frac{-1}{\sin x + \cos x} + C$  (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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149. Evaluate:  $\int \frac{\cos x - \sin x}{1 + \sin 2x} dx$

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150. Evaluate:  $\int (\cot x + x) \cot^2 x dx$

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151. Evaluate:  $\int \sqrt{\sin 2x} \cos 2x dx$

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152. Evaluate:  $\int (4x + 3) \sqrt{4x^2 + 6x + 1} dx$

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153. Evaluate:  $\int x \sqrt{1 + x^2} dx$

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154. Evaluate:  $\int x \sqrt{1 + 2x^2} dx$

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155. Evaluate:  $\int \frac{3x - 1}{\sqrt{3x^2 - 2x + 7}} dx$

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156. Evaluate:  $\int (x - 1) \sqrt{x^2 - 2x} dx$

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157. Evaluate:  $\int \frac{2ax + b}{ax^2 + bx + c} dx$

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

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

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160. Evaluate:  $\int \frac{x^2}{(2 + 3x^3)^3} dx$

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161. Evaluate:  $\int \frac{x}{\sqrt{a^2 - x^2}} dx$

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162. Evaluate the following integrals.

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

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163. Evaluate:  $\int x^3 \sqrt{x^2 + 5} dx$

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164. Evaluate:  $\int x^2 \sqrt{a^3 + x^3} dx$

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165. Evaluate:  $\int (x^3 - 1)^{\frac{1}{3}} x^5 dx$

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166. Evaluate:  $\int \frac{x}{9 - 4x^2} dx$

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167. Evaluate:  $\int \frac{x^3}{\sqrt{x^2 + 2}} dx$

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168. Evaluate:  $\int \frac{x^3}{(x^2 - a^2)^{\frac{3}{2}}} dx$

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169. Evaluate:  $\int \frac{1}{x \log_e x} dx$

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170. Evaluate:  $\int \frac{dx}{x(\log x)^m}, x > 0$

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

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172. Evaluate:  $\int \frac{\tan x}{\log_e \cos x} dx$

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173. Evaluate:  $\int \cot x \log_e \sin x dx$

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174. Evaluate:  $\int \frac{\cot x}{\log \sin x} dx$



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175. Evaluate:  $\int \frac{dx}{x \log x \log(\log x)}$

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176. Evaluate:  $\int \frac{e^x}{e^x + 2} dx$

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

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178. Evaluate:  $\int e^{\tan x} \sec^2 x dx$

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179. Evaluate :  $\int x e^{x^2} dx$ .

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180. Evaluate:  $\int \frac{x}{e^{x^2}} dx$

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

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

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

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

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185. Evaluate:  $\int \frac{x^2 \tan^{-1} x^3}{1+x^6} dx$

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

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

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

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189. Evaluate:  $\int \frac{\tan^2 x \sec^2 x}{1+\tan^6 x} dx$

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190. Evaluate:  $\int \frac{dx}{x \log x \log(\log x)}$

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

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

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193. Evaluate:  $\int \sqrt{\sec x - 1} dx$

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

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

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196. Evaluate:  $\int \frac{1 + \cos \theta}{\theta + \sin \theta} d\theta$

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197. Evaluate:  $\int \frac{1 + \tan x}{x + \log \sec x} dx$

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198. Evaluate:  $\int \frac{(3 \tan^2 x + 2) \sec^2 x}{(\tan^3 x + 2 \tan x + 5)} dx$

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

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200.  $\int \frac{dx}{x + \sqrt{x}}$

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

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202. Evaluate:  $\int \frac{\tan^4 \sqrt{x} \sec^2 \sqrt{x}}{\sqrt{x}} dx.$

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203. Evaluate:  $\int \frac{\tan x \sec^2 x}{1 - \tan^2 x} dx$

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204. Evaluate:  $\int \frac{a}{b + ce^x} dx$

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

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206. Evaluate:  $\int \frac{x^5}{\sqrt{1 + x^2}} dx$

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207. Evaluate:  $\int e^{3 \log x} (x^4 + 1)^{-1} dx$

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208.  $\int \frac{dx}{\sqrt[3]{(x+1)^2(x-1)^4}}$

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

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210.  $\int [f(ax+b)]^n f'(ax+b) dx$

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211. Evaluate:  $\int \frac{1}{\sqrt{\sin^3 x \sin(x + \alpha)}} dx, \alpha \neq n\pi, n \in \mathbb{Z}$

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212. Evaluate:  $\int \sqrt{1 - x^2} dx$

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

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214. Evaluate:  $\int \frac{dx}{x^2 \sqrt{a^2 - x^2}}$

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

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

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217. Evaluate:  $\int \frac{x^2}{\sqrt{1-x^6}} dx$

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

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219. Evaluate:  $\int \frac{\cos x}{\sqrt{4 - \sin^2 x}} dx$

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

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

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222. Evaluate:  $\int \frac{x^5}{1 + x^{12}} dx$

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

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

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

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

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227. Evaluate:  $\int \frac{x^3}{(x^2 - a^2)^{\frac{3}{2}}} dx$

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228. Evaluate:  $\int \frac{e^x}{\sqrt{e^{2x} - 9}} dx$

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

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

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231. Evaluate:  $\int x e^{2x} dx$

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232. Evaluate:  $\int x \cos x dx$

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233. Evaluate:  $\int x \sin 2x dx$

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234. Evaluate:  $\int x \cos x dx$

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235. Evaluate:  $\int x \cos(2x + 3) dx$



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236. Evaluate:  $\int (x + 1) \cos x dx$



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237. Evaluate:  $\int x \sin 2x \cos 2x dx$



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238. Evaluate:  $\int x \sin x \sin 2x dx$



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239. Evaluate:  $\int x \cos ax \cos bx dx$



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240. Evaluate:  $\int x \sin 2x \sin 3x dx$

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241. Evaluate:  $\int x \sec^2 x dx$

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

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243. Evaluate:  $\int x \tan x \sec^2 x dx$

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244. Evaluate:  $\int x \sin^2 x \cos^2 x dx$



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245. Evaluate:  $\int x \cos^2 ax dx$



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246. Evaluate:  $\int x \sin^3 x dx$



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247. Evaluate:  $\int x^2 \cos 2x dx$



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248. Evaluate:  $\int x^2 \sin x dx$



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249. Evaluate:  $\int \sin \sqrt{x} dx$

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250. Evaluate:  $\int x^3 \sin x^2 dx$

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251. Evaluate:  $\int (ax + b) \sqrt{cx + d} dx$

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252. Evaluate:  $\int x^2 \sqrt{ax + b} dx$

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253. Evaluate:  $\int x^2 \log x dx$



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254. Evaluate:  $\int x \log x dx$ .



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255. Evaluate:  $\int_{\log_{10}} x dx$



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256. Evaluate:  $\int \log(x + 1) dx$



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257. Evaluate:  $\int (x^2 + 1) \log x dx$



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258. Evaluate:  $\int x \log 2x dx$

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259. Evaluate:  $\int \log(2 + x^2) dx$

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260. Evaluate:  $\int \left( \frac{\log(\log x)}{x} \right) dx$

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261. Evaluate:  $\int \cos^{-1} x dx$

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



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



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264.  $\int \sin^{-1} \left( \frac{2x}{1+x^2} \right) dx$  is equal to  $x \tan^{-1} x - \ln |\sec(\tan^{-1} x)| + c$   
 $x \tan^{-1} x + \ln |\sec(\tan^{-1} x)| + c$        $x \tan^{-1} x - \ln |\cos(\tan^{-1} x)| + c$

none of these



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



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266. Evaluate:  $\int x^2 \sin^{-1} x dx$



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267. Evaluate:  $\int \cos e c^3 x dx$



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268. Evaluate:  $\int e^{ax} \cos bx dx$



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269. Evaluate:  $\int e^{-x} \sin x dx$



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270. Evaluate:  $\int e^{2x} \sin x dx$



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

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272. Evaluate:  $\int x 2^x dx$

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273. Evaluate:  $\int \frac{\log x}{x^2} dx$

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274. Evaluate:  $\int e^{\sin x} \sin 2x dx$

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



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276. Evaluate:  $\int \frac{\sqrt{x^2 + 1} \{ \log(x^2 + 1) - 2 \log x \}}{x^4} dx$



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



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278. Evaluate:  $\int \frac{x - \sin x}{1 - \cos x} dx$



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



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

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281. Write a value of  $\int e^x (\sin x + \cos x) dx$

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

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

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284. Evaluate:  $\int e^x \frac{(1-x)^2}{(1+x^2)^2} dx$

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285.  $\int e^x \left( \frac{x^3 + x + 1}{(1+x^2)^{3/2}} \right) dx$  is equal to :

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286. Evaluate:  $\int e^x (\tan x - \log \cos x) dx$

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287. Evaluate:  $\int e^x (\cot x - \cos e c^2 x) dx$

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288. Evaluate:  $\int e^x (\tan x + \log \sec x) dx$

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289. Evaluate:  $\int e^x (\cot x + \log \sin x) dx$

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290. Choose the correct answer  $\int e^x \sec x (1 + \tan x) dx$  (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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291. Evaluate:  $\int e^x \frac{\sqrt{1-x^2} \sin^{-1} x + 1}{\sqrt{1-x^2}} dx$

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

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

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294. Evaluate:  $\int \frac{2x - 1}{4x^2} e^{2x} dx$

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295. Evaluate:  $\int \frac{x - 3}{(x - 1)^3} e^x dx$

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296. Evaluate:  $\int \frac{2-x}{(1-x)^2} e^x dx$

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

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298. Evaluate :  $\int e^x \frac{2 + \sin 2x}{2 \cos^2 x} dx$

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299. Evaluate:  $\int [\tan(\log x) + \sec^2(\log x)] dx$

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300. Evaluate:  $\int \frac{e^x(1-x)^2}{(1+x^2)^2} dx$

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

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

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

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304. Evaluate: (i)  $\int \frac{1}{\sqrt{1+4x^2}} dx$  (ii)  $\int \frac{1}{\sqrt{a^2+b^2x^2}} dx$

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

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306. Evaluate:  $\int \sqrt{3x^2+4x+1} dx$

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

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308. Evaluate:  $\int \frac{dx}{\sqrt{10 - 8x - 2x^2}}$

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309. Evaluate:  $\int \frac{dx}{\sqrt{4 - 2x - 2x^2}}$

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310. Evaluate:  $\int \frac{dx}{\sqrt{16 - 2x - 2x^2}}$

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311. Evaluate  $\int \frac{dx}{\sqrt{x^2 + 2x + 2}}$ .

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312. Integrate the functions  $\frac{1}{\sqrt{7-6x-x^2}}$

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313. Evaluate:  $\int \frac{1}{\sqrt{5x^2-2x}} dx$

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314. Integrate the functions  $\frac{1}{\sqrt{8+3x-x^2}}$

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

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316. Evaluate:  $\int \frac{dx}{\sqrt{(x-1)(x-2)}}$

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317. Evaluate:  $\int \frac{dx}{\sqrt{(x-1)(2-x)}}$

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318. about to only mathematics

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319. Evaluate: (i)  $\int \frac{1}{x^2 + 6x + 13} dx$

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320. Evaluate:  $\sqrt{4-x^2}$



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321. Evaluate:  $\int \sqrt{1 - 4x^2} dx$



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



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323. Evaluate:  $\int \sqrt{1 - 4x - x^2} dx$



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324. Evaluate:  $\int \sqrt{1 + x^2} dx$



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325. Evaluate:  $\int \sqrt{1 + \frac{x^2}{9}} dx$

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326. Evaluate:  $\int \sqrt{x^2 + 4x + 1} dx$

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327. Evaluate:  $\int \sqrt{x^2 + 4x + 6} dx$

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328. Evaluate:  $\int \frac{x + 2}{2x^2 + 6x + 5} dx$

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



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



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



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332. Evaluate:  $\int \frac{5x + 3}{\sqrt{x^2 + 4x + 10}} dx$



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



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

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

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336.  $x\sqrt{x + x^2}$

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337. Evaluate:  $\int (x + 3) \sqrt{3 - 4x - x^2} dx$

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338. Evaluate:  $\int \frac{x^2}{1 - x^6} dx$



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339. Evaluate:  $\int \frac{3x}{1 + 2x^4} dx$



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340. Evaluate:  $\int \frac{x^2}{\sqrt{x^6 + a^6}} dx$



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



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342.  $\frac{1}{x^2 - 9}$



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$$343. \int \frac{x}{(x+1)(x+2)} dx$$

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$$344. \int \frac{dx}{(x+1)(x+2)}$$

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$$345. \int \frac{2x+1}{(x+2)(x-3)} dx$$

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$$346. \int \frac{2x}{x^2+3x+2} dx$$

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$$347. \text{ Evaluate: } \int \frac{5x}{(x+1)(x^2-4)} dx$$



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348. 
$$\int \frac{x}{(x-1)(x-2)(x-3)} dx$$



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



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350. 
$$\int \frac{\cos x}{(1+\sin x)(2+\sin x)} dx$$



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351. Evaluate: 
$$\int \frac{x+1}{x(1+x e^x)} dx$$



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352. 
$$\int \frac{\sec^2 x}{(2 + \tan x)(3 + \tan x)} dx$$

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353. Find the equations of the circles passing through the point  $(-4, 3)$  and touching the lines  $x + y = 2$  and  $x - y = 2$

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354. Evaluate: 
$$\int \frac{1}{x(x^6 + 1)} dx$$

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355. 
$$\int \frac{dx}{e^x - 1}$$

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

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

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

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

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

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

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

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

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

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

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366. Evaluate:  $\int \frac{x^2 + 1}{x^2 - 5x + 6} dx$

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367. Evaluate:  $\int \frac{x^2}{x^2 + 6x + 12} dx$

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368. Evaluate  $\int \frac{1 - \cos x}{\cos x(1 + \cos x)} dx$

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

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370. Evaluate:  $\int \frac{\sin x}{\sin 4x} dx$

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

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

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

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374. Evaluate:  $\int \frac{\sec^2 x}{\sqrt{\tan^2 x + 4}} dx$

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375. Evaluate: (i)

(ii)  $\int \frac{1}{v} \left( (vi)(vii)x^{(viii)4(ix)}(x) + 1 \right) (xi)(\xi i) dx (\xi ii)$  (xiv) (ii)

(xv)  $\int (xvii) \frac{(xviii)(\xi x)x^{(xx)2(xxi)}(xxii)}{xxiii} \left( (xxiv)(\times v)x^{(xxvi)4(xxvii)} \right)$

(xxxii)  $\int \sqrt{(vi)(vii)\tan\theta(viii)(ix)} dth\eta(x)$  (xi)

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

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377. Evaluate the following integrals :

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

(ii)  $\int \frac{2 \sin x + \cos x}{7 \sin x - 5 \cos x} dx$ , br. (iii)  $\int \frac{5 \sin x + 6}{2 \cos x + \sin x + 3} dx$

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

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

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

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381.  $\int \frac{\sin x}{3 \sin x + 5 \cos x} dx$

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

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383.  $\int \frac{dx}{4 \sin^2 x + 9 \cos^2 x}$

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



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