MATHS

BOOKS - PREMIERS PUBLISHERS

INTEGRAL CALCULUS

Worked Example

1. Integrate the following with rescpect to x.

$(x+2)^2$

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2. Integrate the following with rescpect to x.

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

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3. Integrate the following with rescpect to x.

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

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4. Integrate the following with rescpect to x.

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

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5. Integrate the following with rescpect to x.

$$\frac{1}{1+\cos x}$$

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6. Integrate the following with respect to x.

$$\sqrt{\frac{1-\cos x}{1+\cos x}}$$

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7. Integrate the following with respect to x.

$$\tan x \sec x$$

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8. Integrate the following with respect to x.

$$\frac{1}{\tan x \sin x}$$

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9. Integrate the following with respect to x.

$$(\tan x + \cot x)^2$$

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10. Integrate the following with respect to x.

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

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11. Integrate the following with respect to x.

$$\frac{1}{e^{-x}}$$

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12. Integrate the following with respect to x.

$$\frac{3^x - 2^{x+1}}{6^x}$$

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13. Integrate the following with respect to x.

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

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14. Integrate the following with respect to x.

e^{x+3}

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15. Evaluate the following with respect to x.

$(3x-4)^6$

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16. Evaluate the following with respect to x.

$$\sqrt{10-3x}$$

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17. Evaluate the following with respect to x.

$$\frac{1}{\sqrt[3]{2x+1}}$$

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18. Evaluate the following with respect to x.

$$\frac{1}{(2x-1)^5}$$

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19. Integrate the following with respect to x.

$$\cos(2x+3)$$

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20. Integrate the following with respect to x.

$\sin mx \cos nx (m > n)$

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21. Integrate the following with respect to x.

$\cos^2 5x . \sin 2x$

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22. Integrate the following with respect to x.

$\tan(ax+b)\sec(ax+b)$

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23. Integrate the following with respect to x.

$\operatorname{cosec}^2(2-3x)$

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24. Integrate the following with respect to x.

e^{ax+b}

Watch Video Solution

25. Integrate the following with respect to x.

$xe^{\left(x^2+5\right)}$

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26. Integrate the following with respect to x.

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

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27. Integrate the following with respect to x.

$$\frac{1}{3x - 5}$$

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28. Integrate the following with respect to x.

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

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29. Integrate the following with respect to x.

$$\frac{1}{x^2 + 6x + 10}$$

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30. $$\frac{1}{\sqrt{1 - (4x)^2}}$$

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31. Integrate the following with respect to x.

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

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32. Integrate the following with respect to x.

$$\frac{1}{\sqrt{8+2x-x^2}}$$

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33. Integrate the following with respect to x.

$$\frac{2}{\sqrt{x}} + 2\sin 2x + \frac{5}{2x+1}$$

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34. Integrate the following with respect to x.

$$\cos 2x - \sec^2(2x+1) + e^{x+3}$$

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35. Integrate the following with respect to x.

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

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36. Integrate the following with respect to x.

$$2\tan(2x+1)\sec(2x+1) - \frac{x^2}{x^3+1} + 5\sqrt{2x+7}$$

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37. Given that $f'(x) = 4x^3 - 3x^2 + 2x - 1$ find $f(x)$ if $f(0) = 0$.

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38. The slope of the tangent line of a curve is given by $2x^3 + 4x^2 - 3x + 2$. Find the equation of the curve if it passes through (0,2).

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39. The equation of motion is given by $s = 10t^2 + 60t$.

Where s is displacement is kilometre and t is time in hour find

Velocity and acceleration at any point.

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40. The equation of motion is given by $s = 10t^2 + 60t$.

Where s is displacement is kilometre and t is

time in hour find

Initial velocity.

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41. The equation of motion is given by $s = 10t^2 + 60t$.

Where s is displacement is kilometre and t is time in hour find

The velocity after 1 hour.

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42. The equation of motion is given by $s = 10t^2 + 60t$.

Where s is displacement is kilometre and t is time in hour find

Distance travelled in 2 hours.

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43. It is observed that a sampling of length 5 cm when plant grow at the rate of $\frac{1}{\sqrt{t+1}}$ cm per day.

find The height of the plant after 3 days.

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44. It is observed that a sampling of length 5 cm when plant grow at the rate of $\frac{1}{\sqrt{t+1}}$ cm per day.

find After how many days will the height of the plant be 11 cm.

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45. A person riding a car4 sees a fallen tree in the road at a distance of 40 meters away from him. He applies breaks at the rate of 16 metres/second^2. If the car was moving at a speed of 32 m/s when the break is applied, would it stop before hitting the fallen tree.

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46. Integrate the following with respect to x.

$\left(1-x^3\right)^2$

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47. Integrate the following with respect to x.

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

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48. Integrate the following with respect to x:

$\cos 5x \sin 3x.$

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49. Integrate the following with respect to x:

$\cos^3 x$

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50. Integrate the following with respect to x:

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

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51. Integrate the following with respect to x:

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

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

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

56. Evaluate $\int (\tan x + \cot x)^2 dx$

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

Watch Video Solution

58. Evaluate $\int \sqrt{1+\sin 2x}\,dx$

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

Watch Video Solution

60. Evaluate: $\int a^x e^x\,dx$

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

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

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

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64. Evaluate:

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

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65. Evaluate:

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

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66. Evaluate:

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

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67. Evaluate:

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

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68. Evaluate the following integrals:

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

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69. Evaluate the following integrals:

$$\int e^{-x^2}xdx$$

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70. Evaluate the following integrals:

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

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71. Evaluate the following integrals:

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

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72. Evaluate the following integrals:

$$\int x(a-x)^8 dx$$

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73. Integrate with respect to x.

$$\int \sec x dx$$

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74. Integrate with respect to x.

$$\int \text{cosec} x \, dx$$

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75. $\dfrac{e^x - e^{-x}}{e^x + e^{-x}}$

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76. Integrate the following with respect to x.

$$\frac{2x - 4}{x^2 - 4x + 7}$$

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77. Integrate the following with respect to x.

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

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78. Integrate the following with respect to x.

$$\frac{\cos 2x}{(\cos x - \sin x)^2}$$

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79. Integrate the following with respect to x.

$$\frac{2\sec^2 x + e^x}{2\tan x + e^x}$$

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80. Evaluate the following integrals

$$\int x e^x dx$$

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81. Evaluate the following integrals

$$\int x \cos x dx$$

Watch Video Solution

82. Evaluate the following integrals

$$\int \log x dx$$

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83. Evaluate the following integrals

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

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

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85. Integrate with respect to x.

$$x^2 e^{4x}$$

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86. Integrate with respect to x.

$x \tan^{-1} x$

Watch Video Solution

87. Integrate with respect to x.

$x^2 \log x$

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88. Evaluate the following integrals.

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

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89. Evaluate the following integrals.

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

Watch Video Solution

90. Integrate with respect to x.

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

Watch Video Solution

91. Integrate the following with respect to x.

$$\frac{x^2}{x^2+7}$$

Watch Video Solution

92. Integrate the following with respect to x.

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

Watch Video Solution

93. Integrate the following with respect to x.

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

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94. Integrate the following with respect to x.

$$\frac{1}{\sqrt{4x^2 - 20x + 34}}$$

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95. Integrate the following with respect to x.

$$\int \frac{1}{\sqrt{x^2 + 4x - 12}}$$

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96. Integrate the following with respect to x.

$$\frac{1}{\sqrt{8+2x-x^2}}$$

Watch Video Solution

97. Evaluate the following integrals.

$$\frac{1}{\sqrt{x^2+6x-10}}$$

Watch Video Solution

98. Evaluate the following integrals.

$$\frac{1}{x^2 + 8x + 32}$$

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99. Evaluate the following integrals.

$$\frac{1}{\sqrt{x^2 + 2x - 35}}$$

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100. Evaluate the following integrals.

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

Watch Video Solution

101. Evaluate the following integrals.

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

Watch Video Solution

102. Evaluate the following integrals.

$$\int \frac{2x+3}{x^2+4x+7}dx$$

Watch Video Solution

103. Evaluate the following integrals.

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

Watch Video Solution

104. Evaluate the following integrals.

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

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105. Integrate the following integrals.

$$\int \sqrt{25-x^2}dx$$

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106. Integrate the following integrals.

$$\int \sqrt{9x^2 - 16}$$

Watch Video Solution

107. Integrate the following integrals.

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

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108. Integrate the following integrals.

$$\int \sqrt{(x-4)(6-x)}dx$$

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Solution To Exercise 11 1

1. Integrate the following with respect to x: x^{11}

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2. Integrate the following with respect to: $\frac{1}{x^7}$

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3. Integrate the following with respect to: $3\sqrt{x^4}$

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4. Integrate the following with respect to : $\left(x^5\right)^{\frac{1}{8}}$

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5. Integrate the following with respect to x.

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

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6. Integrate the following with respect to x.

$$\frac{\tan x}{\cos x}$$

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7. Integrate the following with respect to x.

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

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8. Integrate the following with respect to x.

$$\frac{1}{\cos^2 x}$$

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9. Integrate the following with respect to x.

$$12^x$$

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10. $\frac{x^{24}}{x^{25}}$

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11. Integrate the following with respect to x.

e^x

Watch Video Solution

12. Integrate the following with respect to x.

$(1 + x^2)$

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13. Integrate the following with respect to x.

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

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Solution To Exercise 11 2

1. Integrate the following functions with respect to x : $(x+5)^6$

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2. Integrate the following with respect to x.

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

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3. Integrate the following with respect to x.

$\sqrt{3x+2}$

Watch Video Solution

4. Integrate the following with respect to x.

$\sin 3x$

Watch Video Solution

5. Integrate the following with respect to x.

$\cos(5 - 11x)$

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6. Integrate the following with respect to x.

$\text{cosec}^2(5x - 7)$

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7. Integrate the following with respect to x.

e^{3x-6}

Watch Video Solution

8. Integrate the following with respect to x.

e^{8-7x}

Watch Video Solution

9. $\frac{1}{6-4x}$

Watch Video Solution

10. Integrate the following with respect to x.

$\sec^2 \frac{x}{5}$

Watch Video Solution

11. Integrate the following with respect to x.

$\cos ec(5x + 3)\cot(5x + 3)$

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12. Integrate the following with respect to x.

$30\sec(2-15x)\tan(2-15x)$

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13. $\frac{1}{\sqrt{1-(4x)^2}}$

Watch Video Solution

14. $\frac{1}{\sqrt{1-81x^2}}$

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15. Integrate the following with respect to x.

$$\frac{1}{1+36x^2}$$

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Solution To Exercise 11 3

1. Integrate the following with respect to x :

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

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2. $4\cos(5-2x)+9e^{3x-6}+\dfrac{24}{6-4x}$

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3. Integrate the following with respect to x.

$\sec^2\dfrac{x}{15}+18\cos 2x+10\sec(5x+3)\tan(5x+3)$

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4. $\dfrac{8}{\sqrt{1-(4x)^2}}+\dfrac{27}{\sqrt{1-9x^2}}-\dfrac{15}{1+25x^2}$

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5. $\frac{6}{1+(3x+2)^2} - \frac{12}{\sqrt{1-(3-4x)^2}}$

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6. $\frac{1}{3}\cos\left(\frac{x}{3}-4\right) + \frac{7}{7x+9} + e^{\frac{x}{5}+3}$

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Solution To Exercise 11 4

1. If $f'(x) = 4x - 5$ and $f(2) = 1$, find f(x).

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2. If $f'(x) = 9x^2 - 6x$ and $f(0) = -3$, find f(x)

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3. If f''(x) = 12 x - 6 and f(1) = 30 , f'(1) = 5 find f (x)

.

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4. A ball is thrown vertically upward from the ground with an initial velocity of 39.2 m/sec . If the only force considered is that attributed to the acceleration due to gravity find how high the ball will rise ?

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5. A ball is thrown vertically upward from the ground with an initial velocity of 39.2 m/sec . If

the only force considered is that attributed to the acceleration due to gravity, find the speed with which will it strike the ground and

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6. A ball is thrown vertically upward from the ground with an initial velocity of 39.2 m/sec . If the only force considered is that attributed to the acceleration due to gravity find how high the ball will rise ?

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7. A wound is healing in such a way that t days since Sunday the area of the wound has been decreasing at a rate of $-\frac{3}{(t+2)^2} cm^2$ per day where $0 < t \leq 8$. If on Monday the area of the wound was $1.4 cm^2$

What was the area of the wound on Sunday ?

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8. A wound is healing in such a way that t days since Sunday the area of the wound has been decreasing at a rate of $-\frac{3}{(t+2)^2} cm^2$ per day where $0 < t \leq 8$. If on Monday the area of the wound was $1.4 cm^2$

What is the anticipated area of the wound on Thursday if it contimues to heal at the same rate ?

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Solution To Exercise 11 5

1. Integrate the following functions with respect to x :

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

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2. Integrate the following functions with respect to x.

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

Watch Video Solution

3. Integrate the following functions with respect to x.

$(2x - 5)(36 + 4x)$

Watch Video Solution

4. Integrate the following functions with respect to x.

$\cot^2 x + \tan^2 x$

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5. Integrate the following functions with respect to x.

$$\frac{\cos 2x - \cos 2\alpha}{\cos x - \cos \alpha}$$

Watch Video Solution

6. Integrate the following functions with respect to x.

$$\frac{3 + 4\cos x}{\sin^2 x}$$

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7. Integrate the following functions with respect to x.

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

Watch Video Solution

8. Integrate the following functions with respect to x.

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

Watch Video Solution

9. Integrate the following functions with respect to x.

$\cos 3x \cos 2x.$

Watch Video Solution

10. Integrate the following functions with respect to x.

$\sin^2 5x$

Watch Video Solution

11. Integrate the following functions with respect to x.

$$\frac{1+\cos 4x}{\cot x - \tan x}$$

Watch Video Solution

12. Integrate the following functions with respect to x .

$$e^{x \log a} e^{x}$$

Watch Video Solution

13. Integrate the following functions with respect to x.

$(3x + 4)\sqrt{3x + 7}.$

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14. Integrate the following functions with respect to x .

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

Watch Video Solution

15. Integrate the following functions with respect to x.

$$\frac{1}{\sqrt{x+4}-\sqrt{x-4}}$$

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16. $\frac{x+1}{(x+2)(x+3)}$

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17. Integrate the following functions with respect to x .

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

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18. Integrate the following functions with respect to x .

$$\frac{3x-9}{(x-1)(x+2)(x^2+1)}$$

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19. Integrate the following functions with respect to x .

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

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Solution To Exercise 11 6

1. Integrate the following with respect to x :

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

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2. Integrate the following with respect to x.

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

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3. $\frac{e^x - e^{-x}}{e^x + e^{-x}}$

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4. Integrate the following with respect to x.

$$\frac{10x^9 + 10^x \log_e 10}{10^x + x^{10}}$$

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5. $\frac{\sin \sqrt{x}}{\sqrt{x}}$

Watch Video Solution

6. $\frac{\cot x}{\log(\sin x)}$

Watch Video Solution

7. $\frac{\cos ecx}{\log\left(\tan\frac{x}{2}\right)}$

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8. Integrate the following with respect to x.

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

Watch Video Solution

9. Integrate the following with respect to x.

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

Watch Video Solution

10. Integrate the following with respect to x.

$$\frac{\sqrt{x}}{1+\sqrt{x}}$$

Watch Video Solution

11. Integrate the following with respect to x.

$$\frac{1}{x \log x \log(\log x)}$$

Watch Video Solution

12. $\alpha\beta x^{\alpha-1} e^{-\beta x^{\alpha}}$

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13. Integrate the following with respect to x.

$\tan x \sqrt{\sec x}$

Watch Video Solution

14. Integrate the following with respect to x.

$x(1-x)^{17}$

Watch Video Solution

15. Integrate the following with respect to x.

$\sin^5 x \cos^3 x.$

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Solution To Exercise 11 7

1. Integrate the following with respect to x.

$9xe^{3x}$

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2. Integrate the following with respect to x.

$x \sin 3x$

Watch Video Solution

3. Integrate the following with respect to x.

$25xe^{-5x}$

Watch Video Solution

4. Integrate the following with respect to x.

$x \sec x \tan x$

Watch Video Solution

5. Integrate the following with respect to x.

$x \log x$

Watch Video Solution

6. Integrate the following with respect to x.

$x^2 \cos x$

Watch Video Solution

7. Integrate the following with respect to x.

$x^3 \sin x$

Watch Video Solution

8. Integrate the following with respect to x.

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

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9. $x^5 e^{x^2}$

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10. $\tan^{-1}\left(\frac{8x}{1-16x^2}\right)$

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11. Integrate the following with respect to x.

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

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Solution To Exercise 11 8

1. Integrate the following with respect to x :

$$e^{ax}\cos bx$$

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2. Integrate the following with respect to x.

$e^{2x} \sin x$

Watch Video Solution

3. Integrate the following with respect to x :

$e^{-x} \cos 2x$

Watch Video Solution

4. $e^{-3x} \sin 2x$

Watch Video Solution

5. $e^{-4x} \sin 2x$

Watch Video Solution

6. Integrate the following with respect to x.

$e^{-3x} \cos x.$

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Solution To Exercise 11 9

1. Integrate the following with respect to x :

$$e^x(\tan x + \log \sec x)$$

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2. Integrate the following with respect to x.

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

Watch Video Solution

3. Integrate the following with respect to x.

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

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4. Integrate the following with respect to x.

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

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5. Integrate the following with respect to x.

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

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6. $\frac{\log x}{(1+\log x)^2}$

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Solution To Exercise 11 10

1. Find the integrals of the following :

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

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2. Find the integrals of the following :

$$\frac{1}{25 - 4x^2}$$

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3. Find the integrals of the following :

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

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4. $\frac{1}{6x - 7 - x^2}$

Watch Video Solution

5. $\frac{1}{(x+1)^2 - 25}$

Watch Video Solution

6. $\frac{1}{\sqrt{x^2+4x+2}}$

Watch Video Solution

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

Watch Video Solution

8. $\frac{1}{\sqrt{x^2+4x+2}}$

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9. $\frac{1}{\sqrt{9+8x-x^2}}$

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Solution To Exercise 11 11

1. $\frac{2x-3}{x^2+4x-12}$

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2. Integrate the following with respect to x.

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

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3. Integrate the following with respect to x.

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

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4. Integrate the following with respect to x :

(i) $\frac{2x+1}{\sqrt{9+4x-x^2}}$ (ii) $\frac{x+2}{\sqrt{x^2-1}}$ (iii) $\frac{2x+3}{\sqrt{x^2+4x+1}}$

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5. Integrate the following with respect to x.

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

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6. Integrate the following with respect to x.

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

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Solution To Exercise 11 12

1. Integrate the following functions with respect to x :

$$\sqrt{x^2+2x+10}$$

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2. Integrate the following functions with respect to x :

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

Watch Video Solution

3. Integrate the following functions with respect to x :

$$\sqrt{(6 - x)(x - 4)}$$

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4. Integrate the following functions with respect to x.

$$\sqrt{9-(2x+5)^2}$$

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5. $\sqrt{81+(2x+1)^2}$

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6. Integrate the following functions with respect to x.

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

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Solution To Exercise 11 13 Mcqs

1. if $\int \frac{3^{\frac{1}{x}}}{x^2} dx = k\left(3^{\frac{1}{x}}\right) + c$, then the value of k is

A. log3

B. $-\log 3$

C. $-\frac{1}{\log 3}$

D. $\frac{1}{\log 3}$

Answer: C

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2. If $\int f'(x)e^{x^2}dx = (x-1)e^{x^2} + c$, then f (x) is

A. $2x^3 - \frac{x^2}{2} + x + c$

B. $\frac{x^3}{2} + 3x^2 + 4x + c$

C. $x^3 + 4x^2 + 6x + c$

D. $\frac{2x^3}{3} - x^2 + x + c$

Answer: D

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3. The gradient (siope) of a curve at any point (x,y) is $\frac{x^2 - 4}{x^2}$. If the curve passes through the point (2 , 7) , then the equation of the curve is ,

A. $y = x + \frac{4}{x} + 3$

B. $y = x + \frac{4}{x} + 4$

C. $y = x^2 + 3x + 4$

D. $y = x^2 - 3x + 6$

Answer: A

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

A. $\cot(xe^x) + c$

B. $\sec(xe^x) + c$

C. $\tan(xe^x) + c$

D. $\cos(xe^x) + c$

Answer: C

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5. $\int \frac{\sqrt{\tan x}}{\sin 2x} dx$ is

A. $\sqrt{\tan x} + c$

B. $2\sqrt{\tan x} + c$

C. $\frac{1}{2}\sqrt{\tan x}+c$

D. $\frac{1}{4}\sqrt{\tan x}+c$

Answer: A

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6. $\int \sin^3 x dx$ is:

A. $\frac{-3}{4}\cos x-\frac{\cos 3x}{12}+c$

B. $\frac{3}{4}\cos x+\frac{\cos 3x}{12}+c$

C. $\frac{-3}{4}\cos x+\frac{\cos 3x}{12}+c$

D. $\frac{-3}{4}\sin x - \frac{\sin 3x}{12} + c$

Answer: C

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7. $\int \frac{e^{6\log x} - e^{5\log x}}{e^{4\log x} - e^{3\log x}} dx$

A. $x + c$

B. $\frac{x^3}{3} + c$

C. $\frac{3}{x^3} + c$

D. $\frac{1}{x^2} + c$

Answer: B

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8. $\int \frac{\sec x}{\sqrt{\cos 2x}} dx$ is

A. $\tan^{-1}(\sin x) + c$

B. $2\sin^{-1}(\tan x) + c$

C. $\tan^{-1}(\cos x) + c$

D. $\sin^{-1}(\tan x) + c$

Answer: D

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

A. $x^2 + c$

B. $2x^2 + c$

C. $\frac{x^2}{2} + c$

D. $-\frac{x^2}{2} + c$

Answer: C

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10. $\int 2^{3x+5} dx$ is

A. $\frac{3\left(2^{3x+5}\right)}{\log 2}$

B. $\frac{2^{3x+5}}{2\log(3x+5)} + c$

C. $\frac{2^{3x+5}}{2\log 3} + c$

D. $\frac{2^{3x+5}}{3\log 2} + c$

Answer: D

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11. $\int \frac{\sin^8 x - \cos^8 x}{1 - 2\sin^2 x \cos^2 x} dx$ is

A. $\frac{1}{2}\sin 2x + c$

B. $-\frac{1}{2}\sin 2x + c$

C. $\frac{1}{2}\cos 2x + c$

D. $-\frac{1}{2}\cos 2x + c$

Answer: B

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

A. $e^x \tan^{-1}(x+1) + c$

B. $\tan^{-1}(e^x) + c$

C. $e^x \frac{\left(\tan^{-1} x^2\right)^2}{2} + c$

D. $e^x \tan^{-1} x + c$

Answer: D

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13. $\int \frac{x^2 + \cos^2 x}{x^2 + 1} \cos ec^2 x dx$ is

A. cotx+$\sin^{-1} x + c$

B. $-\cot x + \tan^{-1} x + c$

C. $-\tan x + \cot^{-1} x + c$

D. $-\cot x - \tan^{-1} x + c$

Answer: D

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14. $\int x^2 \cos x dx$ is:

A. $x^2 \sin x + 2x \cos x - 2 \sin x + c$

B. $x^2 \sin x - 2x \cos x - 2 \sin x + c$

C. $-x^2 \sin x + 2x \cos x + 2 \sin x + c$

D. $-x^2 \sin x - 2x \cos x + 2 \sin x + c$

Answer: A

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15. $\int \sqrt{\frac{1-x}{1+x}}\,dx$ is

A. $\sqrt{1-x^2}+\sin^{-1}x+c$

B. $\sin^{-1}x-\sqrt{1-x^2}+c$

C. $\log\left|x+\sqrt{1-x^2}\right|-\sqrt{1-x^2}+c$

D. $\sqrt{1-x^2}+\log\left|x+\sqrt{1-x^2}\right|+c$

Answer: B

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

A. $\log|e^x \vdash \log|e^x - 1| + c$

B. $\log|e^x| + \log|e^x - 1| + c$

C. $\log|e^x - 1| - \log|e^x| + c$

D. $\log|e^x + 1| - \log|e^x| + c$

Answer: C

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17. $\int e^{-4x} \cos x dx$ is

A. $\frac{e^{-4x}}{17}[4\cos x - \sin x] + c$

B. $\frac{e^{-4x}}{17}[-4\cos x + \sin x] + c$

C. $\frac{e^{-4x}}{17}[4\cos x + \sin x] + c$

D. $\frac{e^{-4x}}{17}[-4\cos x - \sin x] + c$

Answer: B

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

A. $2\log\left|\frac{1-\tan x}{1+\tan x}\right| + c$

B. $\log\left|\frac{1+\tan x}{1-\tan x}\right| + c$

C. $\frac{1}{2}\log\left|\frac{\tan x + 1}{\tan x - 1}\right| + c$

D. $\frac{1}{2}\log\left|\frac{\tan x - 1}{\tan x + 1}\right| + c$

Answer: D

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19. e^{8-7x}

A. $\frac{e^{-7x}}{74}[-7\sin 5x - 5\cos 5x] + c$

B. $\frac{e^{-7x}}{74}[7\sin 5x + 5\cos 5x] + c$

C. $\frac{e^{-7x}}{74}[7\sin 5x - 5\cos 5x] + c$

D. $\frac{e^{-7x}}{74}[-7\sin 5x + 5\cos 5x] + c$

Answer: A

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20. $\int x^2 e^{\frac{x}{2}} dx$ is

A. $x^2 e^{\frac{x}{2}} - 4xe^{\frac{x}{2}} - 8e^{\frac{x}{2}} + c$

B. $2x^2 e^{\frac{x}{2}} - 8xe^{\frac{x}{2}} + c$

C. $2x^2 e^{\frac{x}{2}} - 8xe^{\frac{x}{2}} + 16e^{\frac{x}{2}} + c$

D. $x^2 \frac{e^{\frac{x}{2}}}{2} - \frac{xe^{\frac{x}{2}}}{4} + \frac{e^{\frac{x}{2}}}{8} + c$

Answer: C

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

A. $\sqrt{x^2-1} - 2\log\left|x+\sqrt{x^2-1}\right| + c$

B. $\sin^{-1} x - 2\log\left|x+\sqrt{x^2-1}\right| + c$

C. $2\log\left|x+\sqrt{x^2-1}\right| - \sin^{-1} x + c$

D. $\sqrt{x^2-1} + 2\log\left|x+\sqrt{x^2-1}\right| + c$

Answer: D

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22. $\int \frac{1}{x\sqrt{(\log x)^2 - 5}} dx$ is

A. $\log\left|x + \sqrt{x^2 - 5}\right| + c$

B. $\log\left|\log x + \sqrt{\log x - 5}\right| + c$

C. $\log\left|\log x + \sqrt{(\log x)^2 - 5}\right| + c$

D. $\log\left|\log x - \sqrt{(\log x)^2 - 5}\right| + c$

Answer: C

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23. $\int \sin \sqrt{x} dx$ is

A. $2\left(-\sqrt{x}\cos\sqrt{x} + \sin\sqrt{x}\right) + c$

B. $2\left(-\sqrt{x}\cos\sqrt{x} - \sin\sqrt{x}\right) + c$

C. $2\left(-\sqrt{x}\sin\sqrt{x} - \cos\sqrt{x}\right) + c$

D. $2\left(-\sqrt{x}\sin\sqrt{x} + \cos\sqrt{x}\right) + c$

Answer: A

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

A. $2\sqrt{x}\left(1-e^{\sqrt{x}}\right)+c$

B. $2\sqrt{x}\left(e^{\sqrt{x}}-1\right)+c$

C. $2e^{\sqrt{x}}\left(1-\sqrt{x}\right)+c$

D. $2e^{\sqrt{x}}\left(\sqrt{x}-1\right)+c$

Answer: D

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Problem For Practice

1. Answer the equation:

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

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2. Answer the equation:

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

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3. Answer the equation:

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

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4. Answer the equation:

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

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5. Answer the equation:

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

Watch Video Solution

6. Answer the equation:

$$\int \frac{\sin^4 x}{\cos^6 x} dx$$

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7. Answer the equation:

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

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8. Answer the equation:

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

Watch Video Solution

9. Answer the equation:

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

Watch Video Solution

10. Answer the equation:

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

Watch Video Solution

11. Answer the equation:

$$\int \frac{\tan(3-4x)}{\cos(3-4x)}dx$$

Watch Video Solution

12. Answer the equation:

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

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13. Answer the equation:

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

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14. Answer the equation:

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

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15. Answer the equation:

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

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16. Answer the equation:

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

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17. Answer the equation:

$$\int \frac{2^{x+1} - 3^{x-1}}{6^x} dx$$

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18. Answer the equation:

$$\int \frac{dx}{\sqrt{ax+b} - \sqrt{ax+c}}$$

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19. Answer the equation:

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

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20. Answer the equation:

$$\int \frac{6x+5}{\sqrt{3x^2+5x+6}}dx.$$

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21. $\int \tan\sqrt{\sec x}dx$:

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22. Answer the equation:

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

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23. Answer the equation:

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

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24. Answer the equation:

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

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25. Answer the equation:

$$\int x 5^x dx$$

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26. Answer the equation:

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

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27. Answer the equation:

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

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28. Answer the equation:

$$\int e^{4x} \cos 5x \sin 2x dx.$$

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29. Answer the equation:

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

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30. Answer the equation:

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

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31. Answer the equation:

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

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32. Answer the equation:

$$\int \sqrt{x^2 - 3x + 10}\, dx$$

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33. Answer the equation:

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

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Problem For Practice Mcq

1. $\int \frac{e^{6\log x} - x^5}{e^{4\log x} - x^3} dx$

A. $\frac{x^3}{3} + c$

B. $\frac{3}{x^3} + c$

C. $\frac{1}{x^2} + c$

D. $x + c$

Answer: A

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

A. $\frac{\sin^4 x}{4} - \frac{\sin^5 x}{5} + c$

B. $\frac{\sin^4 x}{4} - \frac{\sin^6 x}{6} + c$

C. $\frac{\sin 6x}{6} - \frac{\sin 4x}{4} + c$

D. $\frac{\sin 5x}{5} - \frac{\sin 4x}{4} + c$

Answer: B

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

A. $\frac{1}{4} \frac{2^{4x}}{\log 8} + c$

B. $\frac{1}{8} \frac{2^{8x}}{\log 4} + c$

C. $\frac{16^x}{\log 2} + c$

D. $\frac{(24)^x}{\log 24} + c$

Answer: C

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

A. $\tan^{-1}(2x) + c$

B. $2\sin^{-1}(\sin 2x) + c$

C. $\tan^{-1}(\cos x) + c$

D. $\sin^{-1}(\tan x) + c$

Answer: D

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5. $\int \frac{x^2 + \sin^2 x}{1 + x^2} \sec^2 x dx$

A. $\tan x - \tan^{-1} x + c$

B. $\tan x + \tan^{-1} x + c$

C. $\tan x + \sin^{-1} x + c$

D. $\tan x - \cot^{-1} x + c$

Answer: A

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6. $\int \sqrt{\frac{4-x}{4+x}}\,dx$

A. $\sin^{-1}\left(\frac{x}{4}\right)+\sqrt{16-x^2}+c$

B. $\sin^{-1}\left(\frac{x}{4}\right)-\sqrt{16-x^2}+c$

C. $\sin^{-1}4x+\sqrt{16-x}+c$

D. $\sin^{-1}4x-\sqrt{16-x^2}+c$

Answer: B

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

A. $\cos ec(xe^x) + c$

B. $\cos(xe^x) + c$

C. $-\cot(xe^x) + c$

D. $\cot(xe^x) + c$

Answer: C

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8. $\int \frac{\tan(3+4x)}{\cos(3+4x)} dx$:

A. $\sin^2(3+4x)+c$

B. $\cos(3+4x)+c$

C. $\frac{\tan(3+4x)}{4}+c$

D. $\frac{\sec(3+4x)}{4}+c$

Answer: D

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

A. $x - e^{-x} + c$

B. $x + e^{-x} + c$

C. $x + c$

D. $e^x + c$

Answer: A

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10. Evaluate $\int(\tan x + \cot x)^2 dx$

A. $\dfrac{(\tan x + \cot x)^3}{3} + c$

B. $\tan x - \cot x + c$

C. $\tan x + \cot x + c$

D. none of these

Answer: B

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

A. $\frac{e^x}{\log 2} + c$

B. $(\log 2)e^x + c$

C. $\frac{(2e)^x}{\log(2e)} + c$

D. $1 + c$

Answer: C

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

A. $\frac{x^4}{4} + \frac{x^3}{3} + \log(x + 1) + c$

B. $\frac{x^4}{4} - \frac{x^3}{3} + \log(x + 1) + c$

C. $\frac{x^4}{4} + \frac{x^3}{3} + 2\log(x + 1) + c$

D. $\frac{x^4}{4} - \frac{x^3}{3} + 2\log(x + 1) + c$

Answer: D

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

A. $\tan x - \sec x + c$

B. $\tan x + \sec x + c$

C. $\cot x - \cos ecx + c$

D. $\cot x + \cos ecx + c$

Answer: A

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

A. $\frac{1}{2}\cot x + c$

B. $-\frac{1}{2}\cot x + c$

C. $\frac{1}{2}\tan x + c$

D. $-\frac{1}{2}\tan x + c$

Answer: B

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15. Evaluate $\int \sqrt{1+\cos 2x}\,dx.$

A. $\sqrt{2}\cot x + c$

B. $\sqrt{2}\tan x + c$

C. $\sqrt{2}\sin x + c$

D. $\sqrt{2}\cos x + c$

Answer: C

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

A. $x+\frac{1}{x}+1+c$

B. $\frac{x^2}{2}+\frac{1}{x}+x+c$

C. $\frac{x^2}{2}+\log x+c$

D. $\frac{x^2}{2}+\log x+2x+c$

Answer: D

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

A. $\log|e^x + \sin x + 2| + c$

B. $\log|e^x + \cos x| + c$

C. $\log|e^x - \sin x + 2| + c$

D. $\log|e^x + \cos x - 1| + c$

Answer: A

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18. $\int \frac{6x+5}{\sqrt{3x^2+5x+1}} dx$:

A. $\log\left(3x^2+5x+1\right)+c$

B. $2\sqrt{3x^2+5x+1}+c$

C. $\sqrt{3x^2+5x+1}+c$

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

Answer: B

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19. $\int x^8 (1+x^9)^5 dx$:

A. $\frac{1}{40}(1+x^9)^6 + c$

B. $\frac{1}{72}(1+x^9)^6 + c$

C. $\frac{1}{54}(1+x^9)^6 + c$

D. $\frac{1}{45}(1+x^9)^6 + c$

Answer: C

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20. $\int \frac{\log \tan x}{\sin 2x} dx$:

A. $\log(\sin 2x) + c$

B. $\log(\tan 2x) + c$

C. $\frac{1}{2}[\log(\tan x)]^2 + c$

D. $\frac{1}{4}(\log \tan x)^2 + c$

Answer: D

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

A. $e^{\tan^{-1}} x + c$

B. $\frac{1}{(1+x^2)^2} + c$

C. $e^{\tan^{-1} x} \hat{} (2) + c$

D. $\tan^{-1} x \cdot e^{\tan^{-1} x} + c$

Answer: A

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22. $\int \tan \sqrt{\sec x}\, dx$:

A. $\tan x + \sqrt{\sec x} + c$

B. $2\sqrt{\sec x} + c$

C. $\sec x + c$

D. $\sqrt{\tan x} + c$

Answer: B

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23. Evaluate: $\int e^{x \log 2} e^x \, dx$

A. $(\log x)^2 + 3x^2 + c$

B. $\frac{x^3}{3} + c$

C. $\frac{e^{x^3}}{3} + c$

D. $\frac{2e^{x^3}}{3} + c$

Answer: C

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24. $\int \frac{dx}{x \log x}$:

A. $\frac{\log x}{x} + c$

B. $\frac{x}{\log x} + c$

C. $\frac{(\log x)^2}{2} + c$

D. $\log(\log x) + c$

Answer: D

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25. Evaluate $\int 2^x e^x dx$

A. $\frac{(2e)^{x+1}}{x+1}$

B. $\frac{e^x 2^x}{\log e}$

C. $\frac{e^x e^x}{\log 2}$

D. $\frac{(2e)^x}{\log(2e)} + c$

Answer: D

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26. $\int \frac{dx}{5-3x}$ is:

A. $\log(5-3x)+c$

B. $\frac{1}{3}\log(3x-5)+c$

C. $-\frac{1}{3}\log(5-3x)+c$

D. $3\log(5-3x)+c$

Answer: C

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27. $\int \cot^{-1} \sqrt{\frac{1+\cos 2x}{1-\cos 2x}}\, dx$ is:

A. $x^2 + c$

B. $\frac{x^2}{2} + c$

C. $-\frac{x^2}{2} + c$

D. $2x^2 + c$

Answer: B

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28. $\int x^2 e^{2x} dx$ is:

A. $e^{2x}\left(\frac{x^2}{2} - \frac{x^8}{2} + \frac{1}{4}\right) + c$

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

C. $e^{2x}\left(\frac{x^2}{2} - \frac{x}{2} + \frac{1}{4}\right) + c$

D. e^{2x}

Answer: C

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

A. $2\sqrt{x}\left(e^{\sqrt{x}} - 1\right) + c$

B. $2e^{\sqrt{x}}\left(\sqrt{x} - 1\right) + c$

C. $2\sqrt{x}\left(1 - e^{\sqrt{x}}\right) + c$

D. $2e^{\sqrt{x}}\left(1 - \sqrt{x}\right) + c$

Answer: B

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30. If $\int \frac{m^{\frac{1}{x}}}{x^2} dx = k\left(m^{\frac{1}{x}}\right) + c$ then k is:

A. $\log m$

B. $\log\left(\frac{1}{m}\right)$

C. $\frac{-1}{\log m}$

D. $\frac{1}{\log m}$

Answer: C

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31. $\int \frac{e^{7\log x} - e^{6\log x}}{e^{6\log x} - e^{5\log x}} dx$ is:

A. $x + c$

B. $\frac{x^2}{2} + c$

C. $\frac{1}{x} + c$

D. $\frac{-1}{x} + c$

Answer: B

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32. $\int \frac{dx}{\left[(\log x)^2 + 4\right]}$ is:

A. $\frac{1}{2}\tan^{-1}\left(\frac{\log x}{2}\right) + c$

B. $\frac{1}{2}\log\left(x + \sqrt{(\log x)^2 + 4}\right)$

C. $\tan^{-1}(\log x) + c$

D. $\log\left[\log x + \sqrt{(\log x)^2 + 4}\right] + c$

Answer: A

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33. $\int e^{ax} \sin bx dx$ is:

A. $\frac{e^{ax}}{a^2+b^2}(a\cos bx + b\sin bx) + c$

B. $\frac{e^{ax}}{a^2+b^2}(a\sin bx + b\cos bx) + c$

C. $\frac{e^{ax}}{a^2+b^2}(a\cos bx - b\sin bx) + c$

D. $\frac{e^{ax}}{a^2+b^2}(a\sin bx - b\cos bx) + c$

Answer: D

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34. $\int \cot x dx$

A. $\log|\sin x| + c$

B. $\log|\cos x| + c$

C. $\cos ec^2 x + c$

D. $-\cos ec^2 x + c$

Answer: A

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35. Match the following Column I to Column II

35.	$\int \frac{dx}{a^2-x^2}$	(a) $\log(x+\sqrt{x^2-a^2})+c$
36.	$\int \frac{dx}{\sqrt{a^2-x^2}}$	(b) $\log(x+\sqrt{x^2+a^2})+c$
37.	$\int \frac{dx}{\sqrt{x^2+a^2}}$	(c) $\frac{1}{a}\tan^{-1}\left(\frac{x}{a}\right)+c$
38.	$\int \frac{dx}{\sqrt{a^2+x^2}}$	(d) $\frac{1}{a}\log\left(\frac{x-a}{x+a}\right)+c$
39.	$\int \frac{dx}{\sqrt{x^2-a^2}}$	(e) $\sin^{-1}\left(\frac{x}{a}\right)+c$
40.	$\int \frac{dx}{x^2-a^2}$	(f) $\frac{1}{2a}\log\left(\frac{a+x}{a-x}\right)+c$

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36. Find the incorrect statement:

A. If k is any constant that

$$\int kf(x)dx = k\int f(x)dx$$

B. $\int\sqrt{a-2x}dx = -\frac{(a-2x)^{\frac{3}{2}}}{3} + c$

C. $\int e^{ax}dx = \frac{e^{ax}}{a} + c$

D. $\int\frac{\sin x}{\cos^2 x}dx = \tan x \sec x + c$

Answer: D

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37. Find the incorrect statement:

A.

$$\int [f(x) + g(x)]dx = \int f(x)dx + \int g(x)dx$$

B. $\int \frac{6}{3x+2}dx = 2\log|3x+2| + c$

C. $\int f(x) \cdot g(x)dx = \int f(x)dx \cdot \int g(x)dx$

D. $\int \frac{e^{2x}-1}{e^x}dx = e^x + e^{-x} + c$

Answer: C

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38. Find the correct statement:

A. $\int \tan x dx = \log|\sin x| + c$

B. $\int \sec x dx = \log|\sec x - \tan x| + c$

C. $\int \frac{f'(x)}{f(x)} dx = \log|f(x)| + c$

D. $\int x \cos x dx = -x \sin x + c$

Answer: C

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39. Find the correct statement:

A. $\int x \sin x dx = -x \cos x + \sin x + c$

B. $\int udv = uv + uv_1 + uv_2 + \ldots$ Where $u, u \ldots$ Are successive derivatives of u and $v, v_1, v_2 \ldots$ Are successive integer of dv

C. $$\int e^x \sin 2x dx = \frac{e^x}{5}(\sin 2x + 2\cos 2x) + c$$

D. $$\int \frac{dx}{\sqrt{4 - x^2}} = \frac{1}{2}\tan^{-1}\left(\frac{x}{2}\right) + c$$

Answer: A

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

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41. Find the odd man out:

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

A. $\log|x| - \log|x-1| + c$

B. $\log|x-1| - \log|x| + c$

C. $\frac{1}{x}\log|x^2-x| + c$

D. $\log|x| + \log|x-1| + c$

Answer: B

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42. (i) $\int \frac{dx}{\sqrt{a^2 - x^2}} = \frac{1}{a}\sin^{-1}\left(\frac{x}{a}\right) + c$

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

(iii)

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

(iv) $\int \frac{dx}{x(x-1)} dx = \log\left|\frac{x-1}{x}\right| + c$

State which pair of the statement given above is true.

A. (iii) and (iv)

B. (i) and (ii)

C. (i) and (iii)

D. (ii) and (iv)

Answer: A