BHASKAR CLASSES PVT LTD

Test - I

1. $\int \frac{1}{x(\log x)^2} \, dx$ is equal to

   a. $2 \log(\log x) + C$

   b. $-\frac{1}{\log x} + C$

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

   d. $\frac{3}{(\log x)^3} + C$

2. The integral $\int \frac{dx}{\sqrt{9-4x^2}}$ is equal to

   a. $\frac{1}{6} \sin^{-1}\left(\frac{2x}{3}\right) + C$

   b. $\frac{1}{2} \sin^{-1}\left(\frac{2x}{3}\right) + C$

   c. $\sin^{-1}\left(\frac{2x}{3}\right) + C$

   d. $\frac{3}{2} \sin^{-1}\left(\frac{2x}{3}\right) + C$

3. $\int \frac{\sec x}{\sec x - \tan x} \, dx$ equals

   a. $\sec x - \tan x + C$

   b. $\sec x + \tan x + C$

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

   d. $-(\sec x + \tan x) + C$

4. $\int 2^{x+2} \, dx$ is equals to

   a. $2^{x+2} + C$

b. $2^{x+2} \log 2 + C$

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

d. $2 . \dfrac{2^x}{\log 2} + C$

5. $\int e^{5 \log x} \, dx$ is equal to

   a. $\dfrac{x^5}{5} + C$

   b. $\dfrac{x^6}{6} + C$

   c. $5x^4 + C$

   d. $6x^5 + C$

6. Find $\int \dfrac{2^{x+1} - 5^{x-1}}{10^x} \, dx$.

7. Find $\int \dfrac{dx}{\sqrt{x} + x}$.

8. Find $\int \dfrac{\sin^6 x}{\cos^8 x} \, dx$.

9. Evaluate $\int \dfrac{2}{1 + \cos 2x} \, dx$.

10. Write the value of $\int \dfrac{dx}{x^2 + 16}$.

11. Find $\int \dfrac{x^2}{(x^2+1)\,(3x^2+4)} \, dx$.

12. Find $\int \dfrac{2 \cos x}{(1 - \sin x)(2 - \cos^2 x)} \, dx$.

13. Area of the region bounded by the curve $y^2 = 4x$ and the X-axis between $x = 0$ and $x = 1$ is

   a. $\dfrac{2}{3}$

   b. $\dfrac{8}{3}$

   c. 3

d. $\frac{4}{3}$

14. Find the area of the ellipse $x^2 + 9y^2 = 36$ using integration.

15. The general solution of the differential equation $\frac{dy}{dx} = e^{x+y}$ is

    a. $e^x + e^{-y} = C$

    b. $e^{-x} + e^{-y} = C$

    c. $e^{x+y} = C$

    d. $2e^{x-y} = C$

16. The number of solutions of the differential equation $\frac{dy}{dx} = \frac{y+1}{x-1}$

  , when $y(1) = 2$, is

    a. Zero

    b. One

    c. Two

    d. Infinite

17. Find the particular solution of the differential equation $\frac{dy}{dx} - 2xy = 3x^2 e^{x^2}; y(0) = 5$.

18. Find the general solution of the differential equation $(x^2 + 1)\frac{dy}{dx} + 2xy = \sqrt{x^2 + 4}$.

19. Solve the differential equation $xdy - ydx = \sqrt{x^2 + y^2}\, dx$.

20. Solve the differential equation $x \sin\left(\frac{y}{x}\right)\frac{dy}{dx} + x - y \sin\left(\frac{y}{x}\right) = 0$. Given that $x = 1$, when $y = \frac{\pi}{2}$.