



DAV NANDRAJ PUBLIC SCHOOL

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FREQUENTLY ASK QUESTIONS IN BOARD EXAMINATION (XII)

SUBJECT: Mathematics

CHAPTER NAME:

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

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

3. Using the properties of definite integrals, Solve $\int_0^{\frac{\pi}{4}} \log(1 + \tan x) dx$

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

5. Find the particular solution of the differential equation $\log x \left(\frac{dy}{dx}\right) = 3x + 4y$, given that $y=0$ when $x=0$

6. (a) Write the sum of the order and degree of the differential equation:

$$\frac{d}{dx} \left(\frac{dy}{dx}\right)^3 = 0$$

(b) Find the order and degree of the differential equation:

$$x^2 \frac{d^2y}{dx^2} = \left\{1 + \left(\frac{dy}{dx}\right)^2\right\}^4$$

7. Find the area of the region bounded by the ellipse $\frac{x^2}{16} + \frac{y^2}{9} = 1$.

8. Find: $\int \left(\frac{\sin^6 x}{\cos^2 x} + \frac{\sqrt{\tan x}}{\sin x \cos x}\right) dx$

9. Using integration find the area of region bounded by the triangle whose vertices are (1,0), (2,2) and (3,1).

10. Sketch the region bounded by the lines $2x+y=8$, $y=2$, $y=4$ and the y -axis. Hence its area using integration.

11. Find the area of the region bounded by the curve $y=x^2$, the X -axis and the ordinates $x=-2$ and $x=1$.

12. Make a rough sketch of the region $\{(x,y): 0 \leq y \leq x^2+1, 0 \leq y \leq x+1, 0 \leq x \leq 2\}$ and find the area of the region, using the method of integration.

13. Find the area of the region bounded by the curve $y=3x+2$, the X-axis and the ordinates $x= -1$ and $x= 1$.

14. Find the particular solution of the differential equation $e^x \sqrt{1-y^2} dx + \frac{y}{x} dy=0$, given that $y=1$ when $x=0$.

15. Find the general solution of the differential equation $x \log x - \frac{dy}{dx} + y = \frac{2}{x} \log x$

