DPP - 3

Integration

Q.1 Find

(a) $\int x^5 dx$ (b) $\int \frac{1}{\sqrt{x}} dx$ (c) find $\int \frac{1}{r^2} dr$

Q.2 Integrate y w.r.t x, where $y = x^2 + x + 1$

Q.3 Integrate y w.r.t x where $y = 5 \sin x$

Q.4 Integrate y w.r.t x where $y = e^x + \frac{1}{x} + 8$

Q.5 Find (a) $\int \cos(3x + 4) dx$ (b) Find $d\int \frac{1}{(4t-1)} dx$

Q.6 Find $\int (x^e + e^x + e^e) dx$

Q.7 (a) $y = \int \sin^2 x \, dx$ (b) $\int \cos^2 x dx$

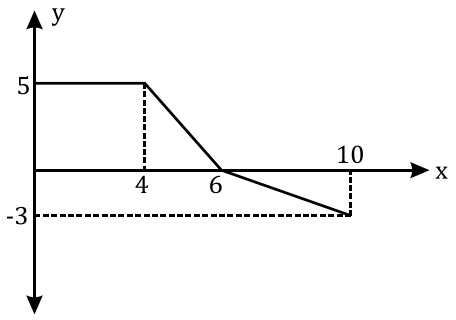
Q.8 Find value of

(a) $\int_0^{\pi} \cos 2x dx$ (b) $\int_2^4 4x dx$

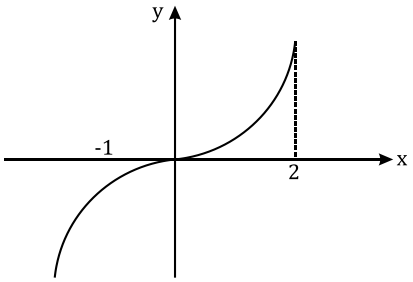
(c) $\int_{\infty}^{0} e^{-t} dt$ (d) $\int_{\infty}^{R} \frac{GMm}{r^2} dr$

Q.9 Find the values of

(a) $\int_0^6 y dx$ (b) $\int_0^{10} y dx$



Q.10 Find area between the curve $y = x^3$ and x-axi sfrom $x = -1$ to $x = 2$



Q.11 $\int x^n dx$ for $n = -1$ is

(A) Not defined

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

(C) $\log_e x$

(D) $2\log_e x$

Q.12 $\int (x^5 + x^7 + x^9)dx =$

(A) $5x^4 + 7x^6 + 9x^8$

(B) $\frac{x^5}{5} + \frac{x^7}{7} + \frac{x^9}{9}$

(C) $x^5\left(x + \frac{x^3}{3} + \frac{x^5}{5}\right)$

(D) $\frac{x^6}{6} + \frac{x^8}{8} + \frac{x^{10}}{10}$

Q.13 $\int_a^b 2\frac{dx}{x} =$

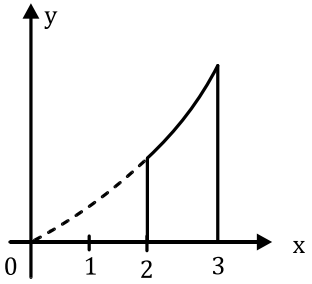
(A) $\log_e b - \log_e a$

(B) $2\log_e (b - a)$

(C) $\log_e \left(\frac{b^2}{a^2}\right)$

(D) $2\log_e \left(\frac{a}{b}\right)$

Q.14 Calculate the area enclosed under the curve $f(x) = x^2$ between the limits $x = 2$ and $x = 3$



ANSWER KEY

1. (a) $\frac{x^6}{6}+C$ (b) $2x^{1/2}+C$ (c) $-\frac{1}{r}+C$

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

3. $-5\cos x$

4. $e^x+\ln x+8x$

5. (a) $\frac{\sin(3x+4)}{3}$ (b) $\frac{\ln(4t-1)}{4}$

6. $\frac{x^{e+1}}{e+1}+e^x+e^e x$

7. (a) $\frac{1}{2}\left[x-\frac{\sin 2x}{2}\right]$ (b) $\frac{1}{2}\left[x+\frac{\sin 2x}{2}\right]$

8. (a) 0 (b) 24 (c) -1 (d) $-\frac{GMm}{R}$

9. (a) 25 (b) 19

10. $\frac{15}{4}$

11. (C)

12. (D)

13. (C)

14. (6.33)