All Branches Hinglish

Subject: Engineering Mathematics

DPP-10

Chapter: Calculus

Topic : Multiple Integrals

1. The value of the integral $\int_0^{\pi} x\cos^2 x\,dx$ is

(a) $\pi^2/8$ (b) $\pi^2/4$

(c) $\pi^2/2$ (d) π^2

2. The integral $\frac{1}{2\pi}\iint_D (x+y+10)\,dx\,dy$, where D denotes the disc: $x^2 + y^2 \le 4$, evaluates to _____

3. A triangle in the *xy*-plane is bounded by the straight lines $2x = 3y$, $y = 0$ and $x = 3$. The volume above the triangle and under the plane $x + y + z = 6$ is _____.

4. The area of the region bounded by the curve $y(x^2 + 2) = 3x$ and $4y = x^2$ is given by

(a) $\int_0^1\int_{y=0}^{\frac{2}{4}} dxdy$

(b) $\int_0^1\int_{y=0}^{\frac{2}{4}} dydx$

(c) $\int_0^2\int_{y=\frac{x^2}{4}}^{3x\left(x^2+2\right)} dydx$

(d) $\int_{y=0}^1\int_{y=\frac{x^2}{4}}^{3x\left(x^2+2\right)} dxdy$

5. The area enclosed between the straight line y = x and the parabola $y = x^2$ in the x – y plane is

(a) 1/6

(b) 1/4

(c) 1/3

(d) 1/2

6. The parabolic arc $y = \sqrt{x}, 1 \le x \le 2$ is revolved around the *x* – axis. The volume of the solid of revolution is

(a) $\pi/4$ (b) $\pi/2$

(c) $3\pi/4$ (d) $3\pi/2$

7. The value of the integral $\int_{-\infty}^{\infty} \frac{dx}{1+x^2}$ is

(a) $-\pi$ (b) $-\pi/2$

(c) $\pi/2$ (d) π

8. The length of the curve $y = \frac{2}{3}x^{\frac{3}{2}}$ between $x = 0$ and $x = 1$ is

(a) 0.27 (b) 0.67

(c) 1 (d) 1.22

9. The value of $\int_0^1\int_0^{\sqrt{1+x^2}} dy\,dx$ is

(a) $\frac{\pi}{4}\log\left(\sqrt{2}+1\right)$

(b) $\frac{\pi}{4}\log\left(\sqrt{2}-1\right)$

(c) $\frac{\pi}{2}\log\left(\sqrt{2}+1\right)$

(d) None of these

10. If *A* is the region bounded by the parabolas $y^2 = 4x$ and $x^2 = 4y$, then $\iint_A ydxdy$ is equal to

(a) 48/5 (b) 36/5

(c) 32/5 (d) None of these

Answer Key

1. **(b)**
2. **(20)**
3. **(10)**
4. **(c)**
5. **(a)**
6. **(d)**
7. **(d)**
8. **(d)**
9. **(d)**
10. **(a)**