

# APPLICATION OF INTEGRALS

## AREA BETWEEN TWO CURVES

### EXERCISE

**Q.1** Find the area between the curve  $f(x) = 3 + 2x - x^2$  and the x-axis.

**Q.2** Find the area to the left of  $g(y) = 3 - y^2$  and to the right of  $x = -1$

**For problems 3 – 11, find the area of the region bounded by the provided set of curves.**

**Q.3**  $y = x^2 + 2, y = \sin(x), x = -1$  and  $x = 2$

**Q.4**  $y = \frac{8}{x}, y = 2x$  and  $x = 4$

**Q.5**  $x = 3 + y^2, x = 2 - y^2, y = 1$  and  $y = -2$

**Q.6**  $x = y^2 - y - 6$  and  $x = 2y + 4$

**Q.7**  $y = x\sqrt{x^2 + 1}, y = e^{-\frac{1}{2}x}, x = -3$  and the y-axis.

**Q.8**  $y = 4x + 3, y = 6 - x - 2x^2, x = -4$  and  $x = 2$

**Q.9**  $y = \frac{1}{x+2}, y = (x+2)^2, x = -\frac{3}{2}, x = 1$

**Q.10**  $x = y^2 + 1, x = 5, y = -3$  and  $y = 3$

**Q.11**  $x = e^{1+2y}, x = e^{1-y}, y = -2$  and  $y = 1$

### ANSWER KEY

1.  $\frac{32}{3}$

2.  $\frac{32}{3}$

3. 8.04355

4. 6.4548

5. 9

6.  $\frac{343}{6}$

7.  $-\frac{7}{3} + 2e^{\frac{3}{2}} + \frac{1}{3}10^{\frac{3}{2}} = 17.17097$

8.  $\frac{343}{12}$

9. 7.9695

10.  $\frac{46}{3}$

11. 22.9983