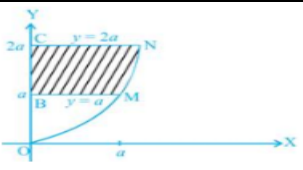
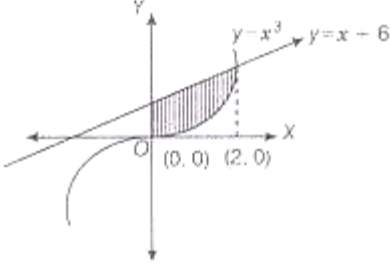
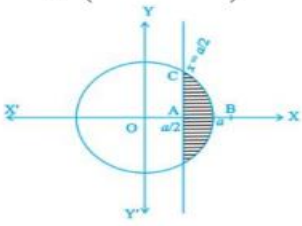
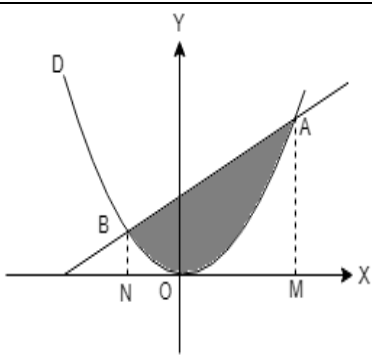


	ANSWER KEY XII(MATHS)
1	B
2	A
3	 We have $\begin{aligned} \text{Area BMNC} &= \int_0^{2a} x dy = \int_0^{2a} a^{1/3} y^{2/3} dy \\ &= \frac{3a^{1/3}}{5} \left[y^{5/3} \right]_a^{2a} \\ &= \frac{3a^{1/3}}{5} \left[(2a)^{5/3} - a^{5/3} \right] \\ &= \frac{3}{5} a^{1/3} a^{5/3} \left[(2)^{5/3} - 1 \right] \\ &= \frac{3}{5} a^2 \left[2 \cdot 2^{2/3} - 1 \right] \text{ sq units.} \end{aligned}$
4	We have, $y = x^3$ and $y = x + 6$ and $x = 0$ $\begin{aligned} \therefore x^3 &= x + 6 \\ \Rightarrow x^3 - x &= 6 \\ \Rightarrow x^3 - x - 6 &= 0 \\ \Rightarrow x^2(x-2) + 2x(x-2) + 3(x-2) &= 0 \\ \Rightarrow (x-2)(x^2 + 2x + 3) &= 0 \\ \Rightarrow x &= 2 \text{ with two imaginary points} \end{aligned}$ $\therefore$ Required area of shaded region $= \int_0^2 (x + 6 - x^3) dx$ $\begin{aligned} &= \left[\frac{x^2}{2} + 6x - \frac{x^4}{4} \right]_0^2 \\ &= \left[\frac{4}{2} + 12 - \frac{16}{4} - 0 \right] \\ &= [2 + 12 - 4] = 10 \text{ sq. units} \end{aligned}$ 
5	Required Area $\begin{aligned} &= 2 \left[\frac{x}{2} \sqrt{a^2 - x^2} + \frac{a^2}{2} \sin^{-1} \frac{x}{a} \right]_{\frac{a}{2}}^a \\ &= 2 \left[\frac{a^2}{2} \cdot \frac{\pi}{2} - \frac{a}{4} \cdot a \frac{\sqrt{3}}{2} - \frac{a^2}{2} \cdot \frac{\pi}{6} \right] \\ &= \frac{a^2}{12} (6\pi - 3\sqrt{3} - 2\pi) \\ &= \frac{a^2}{12} (4\pi - 3\sqrt{3}) \text{ sq units} \end{aligned}$ 

6	The equations of given curves are $y = \frac{3}{4}x^2$(1) and $3x - 2y + 12 = 0$(2) From (2), $2y = 3x + 12$ $\therefore y = \frac{3x+12}{2}$ putting this value of y in (1), we get $\Rightarrow \frac{3x+12}{2} = \frac{3}{4}x^2$ $\Rightarrow 6x + 24 = 3x^2$ $\Rightarrow x^2 - 2x - 8 = 0$ $\Rightarrow (x+2)(x-4) = 0$ $\Rightarrow x = -2, 4$ $\therefore y = 3, 12$ Thus, curves (1) and (2) intersect in points A(4,12) and B(-2,3). Required area= 27 sq.units.	
7	We have, $y = 1 + x + 1$, $x = -3$, $x = 3$, $y = 0$ $\therefore y = \begin{cases} -x, & \text{if } x < -1 \\ x + 2, & \text{if } x \geq -1 \end{cases}$ $\therefore$ Area of shaded region, $A = \int_{-3}^{-1} -x dx + \int_{-1}^3 (x + 2) dx$ $= -\left[\frac{x^2}{2}\right]_{-3}^{-1} + \left[\frac{x^2}{2} + 2x\right]_{-1}^3$ $= -\left[\frac{1}{2} - \frac{9}{2}\right] + \left[\frac{9}{2} + 6 - \frac{1}{2} + 2\right]$ $= -[-4] + [8 + 4]$ $= 12 + 4 = 16 \text{ sq units}$	