



### Exercise 10B

Question 1:

$$2x^2 - 7x + 6 = 0$$

Comparing it with  $ax^2+bx+c=0$ , we get  
 $a = 2$ ,  $b = -7$  and  $c = 6$

$$\begin{aligned}\therefore D &= (b^2 - 4ac) \\ &= [(-7)^2 - (4 \times 2 \times 6)] \\ &= (49 - 48) = 1 \\ \therefore D &= 1\end{aligned}$$

Question 2:

$$3x^2 - 2x + 8 = 0$$

The given equation is

Comparing it with  $ax^2+bx+c=0$ , we get  
 $a = 3$ ,  $b = -2$ ,  $c = 8$

$$\begin{aligned}\therefore D &= (b^2 - 4ac) = [(-2)^2 - (4 \times 3 \times 8)] \\ &= (4 - 96) = -92\end{aligned}$$

Question 3:

$$2x^2 - 5\sqrt{2}x + 4 = 0$$

Comparing it with  $ax^2+bx+c=0$ , we get  
 $a = 2$ ,  $b = -5$

$$\begin{aligned}\therefore D &= (b^2 - 4ac) = [(-5\sqrt{2})^2 - (4 \times 2 \times 4)] \\ &= (50 - 32) \\ \therefore D &= 18\end{aligned}$$

Question 4:

$$\sqrt{3}x^2 + 2\sqrt{2}x - 2\sqrt{3} = 0$$

Comparing it with  $ax^2+bx+c=0$ , we get

$$a = \sqrt{3}, b = 2\sqrt{2}, c = -2\sqrt{3}$$

$$\begin{aligned}\therefore D &= (b^2 - 4ac) = \left[ (2\sqrt{2})^2 - (4 \times \sqrt{3} \times (-2\sqrt{3})) \right] \\ &= (8 + 24) = 32 \\ D &= 32\end{aligned}$$

Question 5:

$$1 - x = 2x^2 \Rightarrow 2x^2 + x - 1 = 0$$

$$a = 2, b = 1, c = -1$$

$$\begin{aligned}\therefore D &= (b^2 - 4ac) = \left[ (1)^2 - (4 \times 2 \times (-1)) \right] \\ &= 1 + 8 = 9 \\ D &= 9\end{aligned}$$

Question 6:

$$\text{The given equation is } x^2 = 4x - c \Rightarrow x^2 - 4x + c = 0$$

$$a = 1, b = -4, c = c$$

$$\begin{aligned}\therefore D &= (b^2 - 4ac) = \left[ (-4)^2 - (4 \times 1 \times c) \right] \\ \therefore D &= (16 - 4c)\end{aligned}$$

Question 7:

$$\text{The given equation is } 6x^2 + 7x - 10 = 0$$

Comparing it with  $ax^2 + bx + c = 0$ , we get

$$a = 6, b = 7, c = -10$$

$$\begin{aligned}\therefore D &= (b^2 - 4ac) = \left[ 7^2 - (4 \times 6 \times (-10)) \right] \\ \therefore D &= 49 + 240 = 289 > 0\end{aligned}$$

So the given equation has real roots, given by

$$\begin{aligned}\alpha &= \frac{-b + \sqrt{D}}{2a} = \frac{-7 + \sqrt{289}}{2 \times 6} = \frac{-7 + 17}{12} = \frac{10}{12} = \frac{5}{6} \\ \beta &= \frac{-b - \sqrt{D}}{2a} = \frac{-7 - \sqrt{289}}{2 \times 6} = \frac{-7 - 17}{12} = \frac{-24}{12} = -2\end{aligned}$$

\*\*\*\*\* END \*\*\*\*\*