



Quadratic Equations Ex 8.5 Q1

Answer :

We have to find the discriminant of the following quadratic equations

(i) We have been given, $2x^2 - 5x + 3 = 0$

Now we also know that for an equation $ax^2 + bx + c = 0$, the discriminant is given by the following equation:

$$D = b^2 - 4ac$$

Now, according to the equation given to us, we have, $a = 2$, $b = -5$ and $c = 3$.

Therefore, the discriminant is given as,

$$\begin{aligned} D &= (-5)^2 - 4(2)(3) \\ &= 25 - 24 \\ &= 1 \end{aligned}$$

Therefore, the discriminant of the equation is $\boxed{1}$.

(ii) We have been given, $x^2 + 2x + 4 = 0$

Now we also know that for an equation $ax^2 + bx + c = 0$, the discriminant is given by the following equation:

$$D = b^2 - 4ac$$

Now, according to the equation given to us, we have, $a = 1$, $b = 2$ and $c = 4$.

Therefore, the discriminant is given as,

$$\begin{aligned} D &= (2)^2 - 4(1)(4) \\ &= 4 - 16 \\ &= -12 \end{aligned}$$

Therefore, the discriminant of the equation is $\boxed{-12}$.

(iii) We have been given, $(x-1)(2x-1) = 0$

Now, simplify the equation to be represented in the quadratic form, so we have

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

$$2x^2 - 3x + 1 = 0$$

Now we also know that for an equation $ax^2 + bx + c = 0$, the discriminant is given by the following equation:

$$D = b^2 - 4ac$$

Now, according to the equation given to us, we have, $a = 2$, $b = -3$ and $c = 1$.

Therefore, the discriminant is given as,

$$\begin{aligned} D &= (-3)^2 - 4(2)(1) \\ &= 9 - 8 \\ &= 1 \end{aligned}$$

Therefore, the discriminant of the equation is $\boxed{1}$.

(iv) We have been given, $x^2 - 2x + k = 0$

Now we also know that for an equation $ax^2 + bx + c = 0$, the discriminant is given by the following equation:

$$D = b^2 - 4ac$$

Now, according to the equation given to us, we have, $a = 1$, $b = -2$ and $c = k$.

Therefore, the discriminant is given as,

$$\begin{aligned} D &= (-2)^2 - 4(1)(k) \\ &= 4 - 4k \end{aligned}$$

Therefore, the discriminant of the equation is $\boxed{4 - 4k}$.

(v) We have been given, $\sqrt{3}x^2 + 2\sqrt{2}x - 2\sqrt{3} = 0$

Now we also know that for an equation $ax^2 + bx + c = 0$, the discriminant is given by the following equation:

$$D = b^2 - 4ac$$

Now, according to the equation given to us, we have, $a = \sqrt{3}$, $b = 2\sqrt{2}$ and $c = -2\sqrt{3}$.

Therefore, the discriminant is given as,

$$\begin{aligned} D &= (2\sqrt{2})^2 - 4(\sqrt{3})(-2\sqrt{3}) \\ &= 8 + 24 \\ &= 32 \end{aligned}$$

Therefore, the discriminant of the equation is $\boxed{32}$.

(vi) We have been given, $x^2 - x + 1 = 0$

Now we also know that for an equation $ax^2 + bx + c = 0$, the discriminant is given by the following equation:

$$D = b^2 - 4ac$$

Now, according to the equation given to us, we have, $a = 1$, $b = -1$ and $c = 1$.

Therefore, the discriminant is given as,

$$\begin{aligned} D &= (-1)^2 - 4(1)(1) \\ &= 1 - 4 \\ &= -3 \end{aligned}$$

Therefore, the discriminant of the equation is $\boxed{-3}$.

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