Quadratic Equations Ex 8.4 Q4

Answer :

We have been given that,

$2x^2+x-4=0$

Now divide throughout by 2. We get,

$x^2+\frac{1}{2}x-2=0$

Now take the constant term to the RHS and we get

$x^2+\frac{1}{2}x=2$

Now add square of half of co-efficient of 'x' on both the sides. We have,

$$x^2+\frac{1}{2}x+\left(\frac{1}{4}\right)^2=\left(\frac{1}{4}\right)^2+2$$

$$x^2+\left(\frac{1}{4}\right)^2+2\left(\frac{1}{4}\right)x=\frac{33}{16}$$

$$\left(x+\frac{1}{4}\right)^2=\frac{33}{16}$$

Since RHS is a positive number, therefore the roots of the equation exist.

So, now take the square root on both the sides and we get

$$x+\frac{1}{4}=\pm\frac{\sqrt{33}}{4}$$

$$x=\frac{-1\pm\sqrt{33}}{4}$$

Now, we have the values of 'x' as

$$x=\frac{-1+\sqrt{33}}{4}$$

Also we have,

$$x=\frac{-1-\sqrt{33}}{4}$$

Therefore the roots of the equation are $\boxed{\frac{\sqrt{33}-1}{4}}$ and $\boxed{\frac{-1-\sqrt{33}}{4}}$.

Quadratic Equations Ex 8.4 Q5

Answer :

We have been given that,

$2x^2+x+4=0$

Now divide throughout by 2. We get,

$x^2+\frac{1}{2}x+2=0$

Now take the constant term to the RHS and we get

$x^2+\frac{1}{2}x=-2$

Now add square of half of co-efficient of '*x*' on both the sides. We have,

$$x^2+\frac{1}{2}x+\left(\frac{1}{4}\right)^2=\left(\frac{1}{4}\right)^2-2$$

$$x^2+\left(\frac{1}{4}\right)^2+2\left(\frac{1}{4}\right)x=\frac{-31}{16}$$

$$\left(x+\frac{1}{4}\right)^2=-\frac{31}{16}$$

Since RHS is a negative number, therefore the roots of the equation do not exist as the square of a number cannot be negative.

Therefore the roots of the equation do not exist.

Quadratic Equations Ex 8.4 Q6

Answer :

We have been given that,

$4x^2+4\sqrt{3}x+3=0$

Now divide throughout by 4. We get,

$x^2+\sqrt{3}x+\frac{3}{4}=0$

Now take the constant term to the RHS and we get

$x^2+\sqrt{3}x=-\frac{3}{4}$

Now add square of half of co-efficient of '*x*' on both the sides. We have,

$$x^2+2\left(\frac{\sqrt{3}}{2}\right)x+\left(\frac{\sqrt{3}}{2}\right)^2=\left(\frac{\sqrt{3}}{2}\right)^2-\frac{3}{4}$$

$$x^2+2\left(\frac{\sqrt{3}}{2}\right)x+\left(\frac{\sqrt{3}}{2}\right)^2=0$$

$$\left(x+\frac{\sqrt{3}}{2}\right)^2=0$$

Since RHS is a positive number, therefore the roots of the equation exist.

So, now take the square root on both the sides and we get

$$x+\frac{\sqrt{3}}{2}=0$$

$$x=-\frac{\sqrt{3}}{2}$$

Now, we have the values of '*x*' as

$x=-\frac{\sqrt{3}}{2}$

Also we have,

$x=-\frac{\sqrt{3}}{2}$

Therefore the roots of the equation are $\boxed{-\frac{\sqrt{3}}{2}}$ and $\boxed{-\frac{\sqrt{3}}{2}}$.

********** END **********