Quadratic Equations Ex 8.6 Q4

Answer :

The given quadric equation is $(4-k)x^2+(2k+4)x+(8k+1)=0$, and roots are real and equal

Then find the value of k.

Here, $a=(4-k), b=(2k+4)\text{and}, c=(8k+1)$

As we know that $D=b^2-4ac$

Putting the value of $a=(4-k), b=(2k+4)\text{and}, c=(8k+1)$

$=(2k+4)^2-4\times(4-k)\times(8k+1)$

$=4k^2+16k+16-4(4+31k-8k^2)$

$=4k^2+16k+16-16-124k+32k^2$

$=36k^2-108k+0$

$=36k^2-108k$

The given equation will have real and equal roots, if $D=0$

Thus,

$36k^2-108k=0$

$18k(2k-6)=0$

$k(2k-6)=0$

Now factorizing of the above equation

$k(2k-6)=0$

So, either

$k=0$

or

$$(2k-6)=0$$

$$2k=6$$

$$k=\frac{6}{2}$$

$$=3$$

Therefore, the value of $k=\boxed{0,3}$

Quadratic Equations Ex 8.6 Q5

Answer :

The given quadric equation is $x^2+kx+4=0$, and roots are real.

Then find the value of *k*.

Here,

$a=1, b=k \text{ and}, c=4$

As we know that $D=b^2-4ac$

Putting the value of $a=1, b=k \text{ and}, c=4$

$=(k)^2-4\times1\times4$

$=k^2-16$

The given equation will have real and equal roots, if $D=0$

$k^2-16=0$

Now factorizing of the above equation

$k^2-16=0$

$k^2=16$

$k=\sqrt{16}$

$=\pm4$

Now according to question, the value of *k* is positive.

Therefore, the value of $k=\boxed{4}$

Quadratic Equations Ex 8.6 Q6

Answer :

(i) The given quadric equation is $kx^2+2x+1=0$, and roots are real and distinct

Then find the value of *k*.

Here,

$a=k, b=2 \text{ and}, c=1$

As we know that $D=b^2-4ac$

Putting the value of $a=k, b=2 \text{ and}, c=1$

$D=(2)^2-4\times k\times1$

$=4-4k$

The given equation will have real and distinct roots, if $D>0$

$4-4k>0$

Now factorizing of the above equation

$4-4k>0$

$4k<4$

$k<\frac{4}{4}$

<1

Now according to question, the value of *k* less than 1

Therefore, the value of $\boxed{k<1}$

(ii) The given quadric equation is $kx^2+6x+1=0$, and roots are real and distinct. Then find the value of *k*.

Here,

$a=k, b=6 \text{ and}, c=1$

As we know that $D=b^2-4ac$

Putting the value of $a=k, b=6 \text{ and}, c=1$

$$D=(6)^2-4\times k\times 1$$
$$=36-4k$$

The given equation will have real and distinct roots, if $D>0$

$$36-4k>0$$

Now factorizing of the above equation

$$36-4k>0$$
$$4k<36$$
$$k<\frac{36}{4}$$
$$<9$$

Now according to question, the value of *k* less than 9

Therefore, the value of $\boxed{k<9}$

(iii) The given quadric equation is $x^2-kx+9=0$, and roots are real and distinct

Then find the value of *k*.

Here,

$a=1, b=k \text{ and}, c=9$

As we know that $D=b^2-4ac$

Putting the value of $a=1, b=k \text{ and}, c=9$

$$D=(k)^2-4\times 1\times 9$$
$$=k^2-36$$

The given equation will have real and distinct roots, if $D>0$

$$k^2-36>0$$

Now factorizing of the above equation

$$k^2-36>0$$
$$k^2>36$$
$$k>\sqrt{36}=\pm 6$$
$$k<-6 \text{ or } k>6$$

Therefore, the value of $\boxed{k<-6 \text{ or, } k>6}$

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