Quadratic Equations Ex 8.6 Q2

Answer :

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

Then find the value of *k*.

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

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

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

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

$=16-4k$

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

Thus,

$16-4k=0$

$4k=16$

$k=4$

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

(ii) The given quadric equation is $kx^2-2\sqrt{5}x+4=0$, and roots are real and equal

Then find the value of *k*.

Here, $a=k, b=-2\sqrt{5} \text{ and}, c=4$

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

Putting the value of $a=k, b=-2\sqrt{5} \text{ and}, c=4$

$=\left(2\sqrt{5}\right)^2-4\times k\times 4$

$=20-16k$

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

Thus,

Therefore, the value of $k=\boxed{\frac{5}{4}}$

(iii) The given quadric equation is $3x^2-5x+2k=0$, and roots are real and equal

Then find the value of *k*.

Here, $a=3, b=-5 \text{ and}, c=2k$

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

Putting the value of $a=3, b=-5 \text{ and}, c=2k$

$=(-5)^2-4\times 3\times k$

$=25-12k$

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

Thus,

Therefore, the value of $k=\boxed{\frac{25}{24}}$

(iv) The given quadric equation is $4x^2+kx+9=0$, and roots are real and equal

Then find the value of *k*.

Here, $a=4, b=k \text{ and}, c=9$

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

Putting the value of $a=4, b=k \text{ and}, c=9$

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

$= k^2 - 144$

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

Thus,

Therefore, the value of $k = \boxed{\pm 12}$

(v) The given quadric equation is $2kx^2 - 40x + 25 = 0$, and roots are real and equal

Then find the value of k.

Here, $a = 2k, b = -40 \text{ and}, c = 25$

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

Putting the value of $a = 2k, b = -40 \text{ and}, c = 25$

$= (-40)^2 - 4 \times 2k \times 25$

$= 1600 - 200k$

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

Thus,

$$1600 - 200k = 0$$

$$200k = 1600$$

$$k = \frac{1600}{200}$$

$$= 8$$

Therefore, the value of $k = \boxed{8}$

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