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

Then find the value of *k*.

Here,

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

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

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

$$=\{-2(2k-1)\}^2-4\times k^2\times 4$$
$$=\{4(4k^2-4k+1)\}-16k^2$$
$$=16k^2-16k+4-16k^2$$
$$=-16k+4$$

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

$$-16k+4=0$$
$$16k=4$$
$$k=\frac{4}{16}$$
$$=\frac{1}{4}$$

Therefore, the value of $k=\boxed{\frac{1}{4}}$

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

Then find the value of *k*.

Here,

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

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

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

$$=\{-2(k-1)\}^2-4\times(k+1)\times 1$$
$$=\{4(k^2-2k+1)\}-4k-4$$
$$=4k^2-8k+4-4k-4$$
$$=4k^2-12k+0$$

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

$$4k^2-12k+0=0$$
$$4k^2-12k=0$$

Now factorizing of the above equation

$$4k(k-3)=0$$
$$k(k-3)=0$$

So, either

$$k=0 \text{ or } (k-3)=0$$
$$k=3$$

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

(xxi) The given quadric equation is $2x^2+kx+3=0$, and roots are real and equal

Then find the value of *k*.

Here,

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

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

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

$=k^2-4\times2\times3$

$=k^2-24$

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

$k^2-24=0$

$k^2=24$

$k=\sqrt{24}$

$=\sqrt{4\times6}$

$=\pm2\sqrt{6}$

Therefore, the value of $k=\boxed{\pm2\sqrt{6}}$

(xxii) The given quadric equation is $kx(x-2)+6=0$, and roots are real and equal

Then find the value of *k*.

Here,

$kx(x-2)+6=0$

$kx^2-2kx+6=0$

So,

$a=k, b=-2k \text{ and}, c=6$

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

Putting the value of $a=k, b=-2k \text{ and}, c=6$

$=(-2k)^2-4\times k\times6$

$=4k^2-24k$

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

$4k^2-24k=0$

Now factorizing of the above equation

$4k(k-6)=0$

$k(k-6)=0$

So, either

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

$k=6$

Therefore, the value of $k=\boxed{0,6}$

(xxiii) The given quadratic equation is $\boldsymbol{x^2-4kx+k=0}$, and roots are real and equal.

Then find the value of *k*.

Here,

$\boldsymbol{x^2-4kx+k=0}$

So,

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

As we know that $\boldsymbol{D=b^2-4ac}$

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

$\boldsymbol{D=(-4k)^2-4(1)(k)}$

$\boldsymbol{=16k^2-4k}$

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

So, $\boldsymbol{16k^2-4k=0}$

Now factorizing the above equation,

$\boldsymbol{16k^2-4k=0}$

$\boldsymbol{\Rightarrow 4k(4k-1)=0}$

$\boldsymbol{\Rightarrow 4k=0 \text{ or } 4k-1=0}$

$\boldsymbol{\Rightarrow k=0 \text{ or } k=\frac{1}{4}}$

Therefore, the value of $\boldsymbol{k=0,\ \frac{1}{4}}$.

(xxv) The given quadratic equation is $px(x-3)+9=0$, and roots are real and equal. Then find the value of *p*.

Here,

$px(x-3)+9=0$

$\Rightarrow px^2-3px+9=0$

So,

$a=p,\ b=-3p \text{ and } c=9.$

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

Putting the value of $a=p,\ b=-3p \text{ and } c=9.$

$D=(-3p)^2-4(p)(9)$

$=9p^2-36p$

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

So, $9p^2-36p=0$

Now factorizing the above equation,

$9p^2-36p=0$

$\Rightarrow 9p(p-4)=0$

$\Rightarrow 9p=0 \text{ or } p-4=0$

$\Rightarrow p=0 \text{ or } p=4$

Therefore, the value of $p=0,\ 4.$

(xxiv) The given quadratic equation is $kx(x-2\sqrt{5})+10=0$, and roots are real and equal. Then find the value of *k*.

Here,

$kx(x-2\sqrt{5})+10=0$

$\Rightarrow kx^2-2\sqrt{5}kx+10=0$

So,

$a=k,\ b=-2\sqrt{5}k \text{ and } c=10.$

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

Putting the value of $a=k,\ b=-2\sqrt{5}k \text{ and } c=10.$

$D=\left(-2\sqrt{5}k\right)^2-4(k)(10)$

$=20k^2-40k$

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

So, $20k^2-40k=0$

Now factorizing the above equation,

$20k^2-40k=0$

$\Rightarrow 20k(k-2)=0$

$\Rightarrow 20k=0 \text{ or } k-2=0$

$\Rightarrow k=0 \text{ or } k=2$

Therefore, the value of $k=0,\ 2.$

(xxvi) The given quadratic equation is $4x^2+px+3=0$, and roots are real and equal. Then find the value of *p*.

Here,

$4x^2+px+3=0$

So,

$a=4,\ b=p \text{ and } c=3.$

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

Putting the value of $a=4,\ b=p \text{ and } c=3.$

$D=(p)^2-4(4)(3)$

$=p^2-48$

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

So, $p^2-48=0$

Now factorizing the above equation,

$p^2-48=0$

$\Rightarrow p^2-\left(4\sqrt{3}\right)^2=0$

$\Rightarrow \left(p-4\sqrt{3}\right)\left(p+4\sqrt{3}\right)=0$

$\Rightarrow p-4\sqrt{3}=0 \text{ or } p+4\sqrt{3}=0$

$\Rightarrow p=4\sqrt{3} \text{ or } p=-4\sqrt{3}$

Therefore, the value of $p=\pm 4\sqrt{3}.$

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