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

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, $a=1$, $b=-2$ and $c=1$.

Therefore, the discriminant is given as,

$$D=(-2)^2-4(1)(1)$$
$$=4-4$$
$$=0$$

Since, in order for a quadratic equation to have real roots, $D\geq 0$. Here we find that the equation satisfies this condition, hence it has real and equal roots.

Now, the roots of an equation is given by the following equation,

$$x=\frac{-b\pm\sqrt{D}}{2a}$$

Therefore, the roots of the equation are given as follows,

$$x=\frac{-(-2)\pm\sqrt{0}}{2(1)}$$
$$=\frac{2}{2}$$
$$=1$$

Therefore, the roots of the equation are real and equal and its value is $\boxed{1}$.

(ix) We have been given, $2x^2+5\sqrt{3}x+6=0$

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, $a=2$, $b=5\sqrt{3}$ and $c=6$.

Therefore, the discriminant is given as,

$$D=\left(5\sqrt{3}\right)^2-4(2)(6)$$
$$=75-48$$
$$=27$$

Since, in order for a quadratic equation to have real roots, $D\geq 0$. Here we find that the equation satisfies this condition, hence it has real roots.

Now, the roots of an equation is given by the following equation,

$$x=\frac{-b\pm\sqrt{D}}{2a}$$

Therefore, the roots of the equation are given as follows,

$$x=\frac{-\left(5\sqrt{3}\right)\pm\sqrt{27}}{2(2)}$$
$$=\frac{-5\sqrt{3}\pm 3\sqrt{3}}{4}$$

Now we solve both cases for the two values of x. So, we have,

$$x=\frac{-5\sqrt{3}+3\sqrt{3}}{4}$$
$$=\frac{-\sqrt{3}}{2}$$

Also,

$$x=\frac{-5\sqrt{3}-3\sqrt{3}}{4}$$
$$=-2\sqrt{3}$$

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

(x) We have been given, $\sqrt{2}x^2+7x+5\sqrt{2}=0$

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, $a=\sqrt{2}$, $b=7$ and $c=5\sqrt{2}$.

Therefore, the discriminant is given as,

$$D=(7)^2-4\left(\sqrt{2}\right)\left(5\sqrt{2}\right)$$
$$=49-40=9$$

Since, in order for a quadratic equation to have real roots, $D\geq 0$. Here we find that the equation satisfies this condition, hence it has real roots.

Now, the roots of an equation is given by the following equation,

$$x=\frac{-b\pm\sqrt{D}}{2a}$$

Therefore, the roots of the equation are given as follows,

$$x=\frac{-(7)\pm\sqrt{9}}{2\left(\sqrt{2}\right)}$$
$$=\frac{-7\pm 3}{2\sqrt{2}}$$

Now we solve both cases for the two values of *x*. So, we have,

$$x=\frac{-7+3}{2\sqrt{2}}$$
$$=-\sqrt{2}$$

Also,

$$x=\frac{-7-3}{2\sqrt{2}}$$
$$=-\frac{5}{\sqrt{2}}$$

Therefore, the roots of the equation are $\boxed{-\frac{5}{\sqrt{2}}}$ and $\boxed{-\sqrt{2}}$

(xi) We have been given, $2x^2-2\sqrt{2}x+1=0$

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, $a=2$, $b=-2\sqrt{2}$ and $c=1$.

Therefore, the discriminant is given as,

$$D=\left(-2\sqrt{2}\right)^2-4(2)(1)$$
$$=8-8$$
$$=0$$

Since, in order for a quadratic equation to have real roots, $D\geq 0$. Here we find that the equation satisfies this condition, hence it has real and equal roots.

Now, the roots of an equation is given by the following equation,

$$x=\frac{-b\pm\sqrt{D}}{2a}$$

Therefore, the roots of the equation are given as follows,

$$x=\frac{-\left(-2\sqrt{2}\right)\pm\sqrt{0}}{2(2)}$$
$$=\frac{2\sqrt{2}}{4}$$
$$=\frac{1}{\sqrt{2}}$$

Therefore, the roots of the equation are real and equal and its value is $\boxed{\frac{1}{\sqrt{2}}}$

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

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, $a=3$, $b=-5$ and $c=2$.

Therefore, the discriminant is given as,

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

Since, in order for a quadratic equation to have real roots, $D\geq 0$. Here we find that the equation satisfies this condition, hence it has real roots.

Now, the roots of an equation is given by the following equation,

$$x=\frac{-b\pm\sqrt{D}}{2a}$$

Therefore, the roots of the equation are given as follows,

$$\begin{aligned}x&=\frac{-(-5)\pm\sqrt{1}}{2(3)}\\&=\frac{5\pm 1}{6}\end{aligned}$$

Now we solve both cases for the two values of *x*. So, we have,

$$\begin{aligned}x&=\frac{5+1}{6}\\&=1\end{aligned}$$

Also,

$$\begin{aligned}x&=\frac{5-1}{6}\\&=\frac{2}{3}\end{aligned}$$

Therefore, the roots of the equation are $\boxed{\frac{2}{3}}$ and $\boxed{1}$.

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