Quadratic Equations Ex 14.1 Q21

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

We will apply discriminant rule,

$$x = \frac{-b \pm \sqrt{D}}{2a} \quad \ldots\ldots\ldots\ldots (A)$$

where $D = b^2 - 4ac$

$= 1^2 - 4.\sqrt{2}.\sqrt{2}$

$= 1 - 8$

$= -7$

from (A)

$$x = \frac{-1 \pm \sqrt{-7}}{2.\sqrt{2}}$$

$$= \frac{-1 \pm \sqrt{7}i}{2\sqrt{2}}$$

Thus

$$\therefore \quad x = \frac{-1 \pm \sqrt{7}i}{2\sqrt{2}}$$

Quadratic Equations Ex 14.1 Q22

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

We will apply discriminant rule,

$$x = \frac{-b \pm \sqrt{D}}{2a} \ldots\ldots\ldots\ldots (A)$$

where $D = b^2 - 4ac$

$$= 1^2 - 4.1\frac{1}{\sqrt{2}}$$

$$= 1 - 2\sqrt{2}$$

from (A)

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

$$= \frac{-1 \pm \sqrt{2\sqrt{2} - 1}i}{2}$$

Thus,

$$\therefore \quad x = \frac{-1 \pm \sqrt{2\sqrt{2} - 1}i}{2}$$

Quadratic Equations Ex 14.1 Q23

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

We will apply discriminant rule,

$$x = \frac{-b \pm \sqrt{D}}{2a} \ldots\ldots\ldots\ldots (A)$$

$$D = b^2 - 4ac$$
$$= 1^2 - 4.\sqrt{2}.\sqrt{2}$$
$$= 1 - 8$$
$$= -7$$

from (A)

$$x = \frac{-1 \pm \sqrt{-7}}{2\sqrt{2}}$$

$$= \frac{-1 \pm \sqrt{7}i}{2\sqrt{2}}$$

Thus,

$$\therefore \quad x = \frac{-1 \pm \sqrt{7}i}{2\sqrt{2}}$$

Quadratic Equations Ex 14.1 Q24

$$\sqrt{5}x^2 + x + \sqrt{5} = 0$$

We will apply discriminant rule,

$$x = \frac{-b \pm \sqrt{D}}{2a} \quad \ldots\ldots\ldots\ldots (A)$$

where $D = b^2 - 4ac$

$= 1^2 - 4.\sqrt{5}.\sqrt{5}$

$= 1 - 20$

$= -19$

from (A)

$$x = \frac{-1 \pm \sqrt{-19}}{2.\sqrt{5}}$$

$$= \frac{-1 \pm \sqrt{19}i}{2\sqrt{5}}$$

Thus,

$$\therefore \quad x = \frac{-1 \pm \sqrt{19}i}{2\sqrt{5}}$$

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