Quadratic Equations Ex 14.1 Q17

$$8x^2 - 9x + 3 = 0$$

We will apply discriminant rule,

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

where $D = b^2 - 4ac$

$$= (-9)^2 - 4.8.3$$
$$= 81 - 96$$
$$= -15$$

from (A)

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

$$= \frac{-(-9) \pm \sqrt{-15}}{2.8}$$

$$= \frac{9 \pm \sqrt{15}i}{16}$$

Thus

$$\therefore \quad x = \frac{9 \pm \sqrt{15}i}{16}$$

Quadratic Equations Ex 14.1 Q18

$$13x^2 + 7x + 1 = 0$$

We will apply discriminant rule,

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

where $D = b^2 - 4ac$

$= 7^2 - 4.13.1$

$= 49 - 52$

$= -3$

Thus, from (A)

$$x = \frac{-7 \pm \sqrt{-3}}{2.13}$$

$$= \frac{-7 \pm \sqrt{3}i}{26}$$

Thus

$$\therefore \quad x = \frac{-7}{26} \pm \frac{\sqrt{3}}{26} i$$

Quadratic Equations Ex 14.1 Q19

$$2x^2 + x + 1 = 0$$

We will apply discriminant rule,

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

where $D = b^2 - 4ac$

$= 1^2 - 4.2.1$

$= 1 - 8$

$= -7$

Thus, from (A)

$$x = \frac{-1 \pm \sqrt{-7}}{2.2}$$

$$= \frac{-1 \pm \sqrt{7}i}{4}$$

Thus

$$\therefore \quad x = \frac{-1}{4} \pm \frac{\sqrt{7}}{4} i$$

Quadratic Equations Ex 14.1 Q20

$$\sqrt{3}x^2 - \sqrt{2}x + 3\sqrt{3} = 0$$

We will apply discriminant rule,

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

where $D = b^2 - 4ac$

$$= \left(-\sqrt{2}\right)^2 - 4.\sqrt{3}.3\sqrt{3}$$
$$= 2 - 36$$
$$= -34$$

from (A)

$$x = \frac{-\left(-\sqrt{2}\right) \pm \sqrt{-34}}{2.\sqrt{3}}$$

$$= \frac{\sqrt{2} \pm \sqrt{34}i}{2\sqrt{3}}$$

Thus

$$\therefore \quad x = \frac{\sqrt{2} \pm \sqrt{34}i}{2\sqrt{3}}$$

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