Quadratic Equations Ex 14.1 Q13

$$17x^2 - 8x + 1 = 0$$

We will apply discriminant rule,

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

where $D = b^2 - 4ac$

$$= (-8)^2 - 4.17.1$$
$$= 64 - 68$$
$$= -4$$

from (A)

$$x = \frac{-(-8) \pm \sqrt{-4}}{2.17}$$

$$= \frac{8 \pm 2i}{34}$$

$$= \frac{4 \pm i}{17}$$

$$\therefore \quad x = \frac{4}{17} + \frac{i}{17}, \quad \frac{4}{17} - \frac{i}{17}$$

Quadratic Equations Ex 14.1 Q14

$$27x^2 - 10x + 1 = 0$$

We will apply discriminant rule,

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

where $D = b^2 - 4ac$

$$= (-10)^2 - 4.27.1$$
$$= 100 - 108$$
$$= -8$$

from (A)

$$x = \frac{-(-10) \pm \sqrt{-8}}{54}$$

$$= \frac{10 \pm 2\sqrt{2}i}{54}$$

$$= \frac{5 \pm \sqrt{2}i}{27}$$

$$\therefore \quad x = \frac{5}{27} + \frac{\sqrt{2}i}{27}, \quad \frac{5}{27} - \frac{\sqrt{2}}{27}i$$

Quadratic Equations Ex 14.1 Q15

$$17x^2 + 28x + 12 = 0$$

We will apply discriminant rule,

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

where $D = b^2 - 4ac$

$$= (28)^2 - 4.17.12$$
$$= 784 - 816$$
$$= -32$$

from (A)

$$x = \frac{-28 \pm \sqrt{-32}}{2.17}$$

$$= \frac{-28 \pm 4\sqrt{2}i}{34}$$

$$\therefore \quad x = \frac{-14 \pm 2\sqrt{2}i}{17}$$

Quadratic Equations Ex 14.1 Q16

$$21x^2 - 28x + 10 = 0$$

We will apply discriminant rule,

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

where $D = b^2 - 4ac$

$$= (-28)^2 - 4.21.10$$

$$= 784 - 840$$

$$= -56$$

from (A)

$$x = \frac{-(-28) \pm \sqrt{-56}}{2.21}$$

$$= \frac{28 \pm 2\sqrt{14}\,i}{42}$$

$$\therefore \quad x = \frac{2}{3} \pm \frac{\sqrt{14}}{21}\,i$$

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