

$$20) 2x^2 - 7x + 3 = 0$$

comparing

$$a = 2, b = -7, c = 3$$

$$D = b^2 - 4ac$$

$$= (-7)^2 - 4 \times 2 \times 3$$

$$= 49 - 24$$

$$= 25$$

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

$$= \frac{7 + \sqrt{25}}{2 \times 2}, = \frac{7 - \sqrt{25}}{2 \times 2}$$

$$= \frac{7 + 5}{4}, = \frac{7 - 5}{4}$$

$$= \frac{12}{4}, = \frac{2}{4}$$

$$= 3, = \frac{1}{2}$$

\therefore roots are $\frac{1}{2}, 3$

$$21) 2x^2 + x - 4 = 0$$

comparing

$$a = 2, b = 1, c = -4$$

$$D = b^2 - 4ac$$

$$= 1^2 - 4 \times 2 \times (-4)$$

$$= 1 + 32$$

$$= 33$$

$$x = \frac{-b \pm \sqrt{33}}{2a}$$

$$= \frac{-1 \pm \sqrt{33}}{4} \quad \therefore \text{roots are } \frac{-1 \pm \sqrt{33}}{4}$$

$$22) 4x^2 + 4\sqrt{3}x + 3 = 0$$

comparing

$$a = 4, b = 4\sqrt{3}, c = 3$$

$$D = b^2 - 4ac$$

$$= (4\sqrt{3})^2 - 4 \times 4 \times 3$$

$$= 48 - 48$$

$$= 0$$

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

$$= \frac{-4\sqrt{3} + 0}{2 \times 4}, \frac{-4\sqrt{3} - 0}{2 \times 4}$$

$$= \frac{-4\sqrt{3}}{8}, \frac{-4\sqrt{3}}{8}$$

\therefore roots are $-\frac{\sqrt{3}}{2}, -\frac{\sqrt{3}}{2}$

$$23) 2x^2 + x + 4 = 0$$

comparing

$$a = 2, b = 1, c = 4$$

$$D = b^2 - 4ac$$

$$= 1^2 - 4 \times 2 \times 4$$

$$= 1 - 32$$

$$= -31$$

$$\therefore D < 0$$

no real roots