Exercise - 4.2.

Q1. i) $x^2 - 3x - 10 = 0$

$\Rightarrow x^2 - 5x + 2x - 10 = 0$.

$\Rightarrow x(x-5) + 2(x-5) = 0$.

$\Rightarrow (x-5)(x+2) = 0$.

$x - 5 = 0 \;/\; x + 2 = 0$.

$\Rightarrow x = 5 \;/\; x = -2$.

Hence, the roots are 5 & -2.

ii) $2x^2 + x - 6 = 0$.

$\Rightarrow 2x^2 + 4x - 3x - 6 = 0$.

$\Rightarrow 2(x+2) - 3(x+2) = 0$.

$\Rightarrow (x+2)(2x-3) = 0$.

Either $x + 2 = 0 \;/\; 2x - 3 = 0$.

$\Rightarrow x = -2 \;/\; x = \frac{3}{2}$.

Hence, the roots are -2 and $\frac{3}{2}$.

iii) given: $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$.

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

$\Rightarrow x(\sqrt{2}x + 5) + \sqrt{2}(\sqrt{2}x + 5) = 0$.

$\Rightarrow (\sqrt{2}x + 5)(x + \sqrt{2}) = 0$.

Either $\sqrt{2}x + 5 = 0 \;/\; x + \sqrt{2} = 0$.

$\Rightarrow x = -\frac{5}{\sqrt{2}} \;/\; x = -\sqrt{2}$.

Hence, the roots are $-\frac{5}{\sqrt{2}}$ & $-\sqrt{2}$.

iv) $2x^2 - x + \frac{1}{8} = 0$.

$\Rightarrow 16x^2 - 8x + 1 = 0$.

$\Rightarrow 16x^2 - 4x - 4x + 1 = 0$.

$\Rightarrow 4x(4x-1) - 1(4x-1) = 0$.

$\Rightarrow (4x-1)(4x-1) = 0$.

$4x - 1 = 0 \;/\; 4x - 1 = 0$.

$\Rightarrow x = \frac{1}{4} \;/\; x = \frac{1}{4}$.

Hence, $\frac{1}{4}$ & $\frac{1}{4}$.

(v) $100x^2 - 20x + 1 = 0$.

$\Rightarrow 100x^2 - 10x - 10x + 1 = 0$.

$\Rightarrow 10x(10x-1) - 1(10x-1) = 0$.

$\Rightarrow (10x-1)(10x-1) = 0$.

$10x - 1 = 0 \;/\; 10x - 1 = 0$.

$\Rightarrow x = \frac{1}{10}$ or $x = \frac{1}{10}$.

$\therefore \frac{1}{10}$ & $\frac{1}{10}$.