Ex 4.2

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

$= x^2 - (5-2)x - 10$

$= x^2 - 5x + 2x - 10$

$= x(x-5) + 2(x-5)$

$= (x-5)(x+2)$

Roots $= 5, -2$

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

$= 2x^2 + (4-3)x - 6 = 0$

$= 2x^2 + 4x - 3x - 6$

$= 2x(x+2) - 3(x+2)$

$= (x+2)(2x-3)$

Roots $= -2, \frac{3}{2}$

(iii) $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$

$= \sqrt{2}x^2 + (2+5)x + 5\sqrt{2}$

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

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

$(x+\sqrt{2})(\sqrt{2}x+5)$

Roots $= -\sqrt{2}, \frac{-5}{\sqrt{2}}$

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

$= 16x^2 - 8x + 1 = 0$

$= 16x^2 - (4+4)x + 1$

$= 16x^2 - 4x - 4x + 1$

$= 4x(4x-1) - 1(4x-1)$

$(4x-1)(4x-1)$

Roots $= \frac{1}{4}, \frac{1}{4}$

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

$= 100x^2 - (16+10)x + 1$

$= 100x^2 - 10x - 10x + 1$

$= 10x(10x-1) - 1(10x-1)$

$(10x-1)(10x-1)$

Roots $= \frac{1}{10}, \frac{1}{10}$