

$$1) (x-5)^2 - x + 3 = 0$$

$$x^2 - 2 \cdot 5 \cdot x + 5^2 - x + 3 = 0$$

$$x^2 - 10x + 25 - x + 3 = 0$$

$$x^2 - 11x + 28 = 0$$

$$\Delta = (-11)^2 - 4 \cdot 1 \cdot 28 = 121 - 112 = 9$$

$$x_1 = \frac{-(-11) + \sqrt{9}}{2 \cdot 1} = \frac{11+3}{2} = \frac{14}{2} = 7$$

$$x_2 = \frac{-(-11) - \sqrt{9}}{2 \cdot 1} = \frac{11-3}{2} = \frac{8}{2} = 4$$

$$2) (7-x)(7+x) + 3x^2 = 11x + 34$$

$$7^2 - x^2 + 3x^2 - 11x - 34 = 0$$

$$49 + 2x^2 - 11x - 34 = 0$$

$$2x^2 - 11x + 15 = 0$$

$$\Delta = (-11)^2 - 4 \cdot 2 \cdot 15 = 121 - 120 = 1$$

$$x_1 = \frac{-(-11) + \sqrt{1}}{2 \cdot 2} = \frac{11+1}{4} = \frac{12}{4} = 3$$

$$x_2 = \frac{-(-11) - \sqrt{1}}{2 \cdot 2} = \frac{11-1}{4} = \frac{10}{4} = 2.5$$

$$3) \quad x(x-6) + 20x^2 = 7x - 2$$

$$x^2 - 6x + 20x^2 - 7x + 2 = 0$$

$$21x^2 - 13x + 2 = 0$$

$$D = (-13)^2 - 4 \cdot 21 \cdot 2 = 169 - 168 = 1$$

$$x_1 = \frac{-(-13) + \sqrt{1}}{2 \cdot 21} = \frac{13+1}{42} = \frac{14}{42} = \frac{1}{3}$$

$$x_2 = \frac{-(-13) - \sqrt{1}}{2 \cdot 21} = \frac{13-1}{42} = \frac{12}{42} = \frac{2}{7}$$

~~$$4) \quad (x-4)^3 - x(x^2)$$~~

$$4) \quad (4+3x)^2 - 8 = 2x^2 + 39x$$

$$4^2 + 2 \cdot 4 \cdot 3x + (3x)^2 - 8 - 2x^2 - 39x = 0$$

$$16 + 24x + 9x^2 - 8 - 2x^2 - 39x = 0$$

$$7x^2 - 15x + 8 = 0$$

$$D = (-15)^2 - 4 \cdot 7 \cdot 8 = 225 - 224 = 1$$

$$x_1 = \frac{-(-15) + \sqrt{1}}{2 \cdot 7} = \frac{15+1}{14} = \frac{16}{14} = \frac{8}{7} = 1 \frac{1}{7}$$

$$x_2 = \frac{-(-15) - \sqrt{1}}{2 \cdot 7} = \frac{15-1}{14} = \frac{14}{14} = 1$$