

Factorising & Solving

$$\textcircled{1} \quad 4x = 12 \quad \div 4 \quad \boxed{x = 3} \quad \checkmark$$

$$\textcircled{2} \quad 4x - 2 = 10 \quad 4x = 12 \quad \div 4 \quad \boxed{x = 3} \quad \checkmark$$

$$\textcircled{3} \quad \frac{4x}{3} = 4 \quad \times 3 \quad 12x = 12 \quad \boxed{x = 3} \quad \checkmark$$

$$\textcircled{4} \quad \frac{4x}{3} - 2 = 2 \quad \times 3 \quad 12x - 6 = 6$$

$$4x = 12 \quad \boxed{x = 3} \quad \checkmark$$

$$\textcircled{5} \quad 2\left(\frac{2x}{3} - 1\right) = x$$

$$\frac{2x}{3} - 1 = 0 \quad +1 \quad \times 3 \quad 2x = 3 \quad \boxed{x = \frac{3}{2}} \quad \checkmark$$

$$\textcircled{6} \quad 2\left(\frac{2x}{3} - 1\right) + \frac{2x}{3} = 2 \quad \times 3$$

$$= 6\left(\frac{2x}{3} - 1\right) + 2x = 6$$

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

$$6x = 12 \quad \boxed{x = 2} \quad \checkmark$$

$$\textcircled{7} \quad 4x + 5 = 3(x+1)$$

$$4x + 5 = 3x + 3 \quad -3x \quad \cancel{+ -5} \quad \boxed{x = -2} \quad \checkmark$$

$$\textcircled{8} \quad \frac{4x+2}{3} \cancel{\times 3} \quad \cancel{\frac{3x+2}{4}}$$

$$= 4(4x+2) = 3(3x+2)$$

$$16x + 8 = 9x - 6$$

$$+7x = -14$$

$$\boxed{x = -2} \quad x = -2$$

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$$\textcircled{1} \quad 3x^2 + 6x = \boxed{3x(x+2)} \quad \checkmark$$

$$\textcircled{2} \quad 4x^3 - 6x^2 + 8x^4 \div 2x^2 \\ = \boxed{2x^2(2x-3+4x^2)} \quad \checkmark$$

$$\textcircled{3} \quad 9x^2 - 4 \quad (\text{Difference of 2 squares}) \\ = \boxed{(3x+2)(3x-2)} \quad \checkmark$$

$$\textcircled{4} \quad x^2 + 3x - 4 \\ = \boxed{(x+4)(x-1)} \quad \checkmark$$

$$\textcircled{1} \quad x^2 + 3x - 4 = 0 \\ = (x+4)(x-1) \\ \boxed{x=-4, x=1} \quad \checkmark$$

$$\textcircled{2} \quad x^2 - 3x - 4 = 0 \\ = (x-4)(x+1) \\ \boxed{x=4, x=-1} \quad \checkmark$$

$$\textcircled{3} \quad x^2 + 4x + 4 = 0 \\ (x+2)(x+2) \\ \boxed{x=-2} \quad \checkmark$$

$$\textcircled{4} \quad 4x^2 + 12x - 16 = 0 \\ = (4x-4)(x+4) \\ \boxed{x=1, x=-4} \quad \checkmark$$

$$\textcircled{5} \quad 2x^2 - 6x - 8 = 0 \\ (2x+2)(x-4) \\ \boxed{x=-1, x=4} \quad \checkmark$$