

Factoring & Solving

① $4x = 12 \div 4$ $x = 3$ ✓

② $4x - 2 = 10$
 $4x = 12 \div 4$ $x = 3$ ✓

③ $\frac{4x}{3} = 4 \times 3$ $4x = 12$
 $x = 3$ ✓

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

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

$\frac{2x}{3} - 1 = 0 + 1 \times 3$ $2x = 3$ ✓
 $x = \frac{3}{2}$

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

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

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

$6x = 12$
 $x = 2$ ✓

⑦ $4x + 5 = 3(x + 1)$

$4x + 5 = 3x + 3$ $-3x$ -5
 $x = -2$ ✓

⑧ $\frac{4x+2}{3} \times 3 = \frac{3x-2}{4} \times 4$

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

$16x + 8 = 9x - 6$

$+7x = -14$

$x = -\frac{14}{7}$ $x = -2$

Factoring & Solving

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

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

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

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

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

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

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

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

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