

Manipulation of Variables

① $3x = 6y - 9 \quad \div 6$

$\frac{1}{2}x = y - \frac{3}{2}$

$y = \frac{1}{2}x + \frac{3}{2}$

$y = \frac{x+3}{2}$ ✓

② $4y - 2x = 6 \quad \div 4$

$y - \frac{1}{2}x = \frac{3}{2}$

$y = \frac{1}{2}x + \frac{3}{2}$

$y = \frac{x+3}{2}$ ✓

③ $\frac{3y}{2} = 6 \quad \times 2 \div 3$

$y = 2x$ ✓

④ $\frac{3y}{(x-1)} = 6 \quad \times (x-1)$

$3y = 6x - 6$

$\div 3$

$y = 2x - 2$

$y = 2(x-1)$ ✓

⑤ $\frac{3x+2}{(x-1)} = 6 \quad \times (x-1)$

$3x+2 = 6x-6$

$3x = 6x - 8$

$\div 3$

$y = 2x - \frac{8}{3}$ ✓

o.e

⑥ $4x+3 = 2(y-1)$

$4x+3 = 2y-2$

$4x+5 = 2y$

$\div 2$

$y = 2x + \frac{5}{2}$

o.e..

① when $x=4$, $y = (4+3)/2 = 7/2$ ✓

② when $x=4$, $y = (4+3)/2 = 7/2$ ✓

③ when $x=4$, $y = 2(4) = 8$ ✓

④ when $x=4$, $y = 2(4-1) = 6$ ✓

⑤ when $x=4$, $y = 2(4) - \frac{8}{3} = \frac{16}{3}$ ✓

⑥ when $x=4$, $y = 2(4) + \frac{5}{2} = \frac{21}{2}$ ✓

Manipulation of variables

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

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

$$\textcircled{3} \quad x^2 + 8x + 7 = \boxed{(x+7)(x+1)} \quad \checkmark$$

$$\textcircled{4} \quad 2x^2 + 16x + 14 = \boxed{(2x+2)(x+7)} \quad \checkmark \text{ o.e. } (2(x+1)) = (2x+2)$$

$$\textcircled{5} \quad x^2 - 5x + 6 = \boxed{(x-3)(x-2)} \quad \checkmark$$

$$\textcircled{6} \quad x^2 - x - 12 = \boxed{(x-4)(x+3)} \quad \checkmark$$

$$\textcircled{1} \quad x = 0, \frac{1}{2} \quad \checkmark$$

$$\textcircled{2} \quad x = 0, -2 \quad \checkmark$$

$$\textcircled{3} \quad x = -7, -1 \quad \checkmark$$

$$\textcircled{4} \quad x = -1, -7 \quad \checkmark$$

$$\textcircled{5} \quad x = 3, 2 \quad \checkmark$$

$$\textcircled{6} \quad x = 4, -3 \quad \checkmark$$