

Exercise 4.4

①

$$1) \quad \begin{array}{rcl} 5x - 6 & = & -2x + 15 \\ +2x & & +2x \end{array}$$

$$\begin{array}{rcl} 7x - 6 & = & 15 \\ +6 & & +6 \end{array}$$

$$\begin{array}{rcl} 7x & = & 21 \\ \frac{7}{7} & & \frac{7}{7} \end{array}$$

$$\boxed{x = 3}$$

$$2) \quad \begin{array}{rcl} 4x - 3 & = & 8x + 9 \\ -4x & & -4x \end{array}$$

$$\begin{array}{rcl} -3 & = & 4x + 9 \\ -9 & & -9 \end{array}$$

$$\begin{array}{rcl} -12 & = & 4x \\ \frac{-12}{4} & & \frac{4x}{4} \end{array}$$

$$\boxed{-3 = x}$$

$$3) \quad \begin{array}{rcl} 4 - 3x & = & 2x - 36 \\ -2x & & -2x \end{array}$$

$$\begin{array}{rcl} 4 - 5x & = & -36 \\ -4 & & -4 \end{array}$$

$$\begin{array}{rcl} -5x & = & -40 \\ \frac{-5x}{-5} & & \frac{-40}{-5} \end{array}$$

$$\boxed{x = 8}$$

$$4) \quad \begin{array}{rcl} 7x - 3x + 2 & = & 5 - 2x + 9 \\ 4x + 2 & = & 14 - 2x \\ +2x & & +2x \end{array}$$

$$\begin{array}{rcl} 6x + 2 & = & 14 \\ -2 & & -2 \end{array}$$

$$\begin{array}{rcl} 6x & = & 12 \\ \frac{6x}{6} & & \frac{12}{6} \end{array}$$

$$\boxed{x = 2}$$

$$5) \quad 6x - 3 + 2x = 7x - x + 15$$

$$\begin{array}{rcl} 4x - 3 & = & 6x + 15 \\ -6x & & -6x \end{array}$$

$$\begin{array}{rcl} -2x - 3 & = & 15 \\ +3 & & +3 \end{array}$$

$$\begin{array}{rcl} -2x & = & 18 \\ \frac{-2x}{-2} & & \frac{18}{-2} \end{array}$$

$$\rightarrow \boxed{x = -9}$$

$$6) \quad -2x + 7 - 12 + 3x = 5x - 7x + 10$$

$$\begin{array}{rcl} x - 5 & = & -2x + 10 \\ +2x & & +2x \end{array}$$

$$\begin{array}{rcl} 3x - 5 & = & 10 \\ +5 & & +5 \end{array}$$

$$\begin{array}{rcl} 3x & = & 15 \\ \frac{3x}{3} & & \frac{15}{3} \end{array}$$

$$\rightarrow \boxed{x = 5}$$

$$7) \quad 3(x - 2) + 7x = 2(x + 3) - 4$$

$$3x - 6 + 7x = 2x + 6 - 4$$

$$\begin{array}{rcl} 10x - 6 & = & 2x + 2 \\ -2x & & -2x \end{array}$$

$$\begin{array}{rcl} 8x - 6 & = & 2 \\ +6 & & +6 \end{array}$$

$$\begin{array}{rcl} 8x & = & 8 \\ \frac{8x}{8} & & \frac{8}{8} \end{array}$$

$$\rightarrow \boxed{x = 1}$$

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(2)

$$8) \quad 5(x-3) + 3 = 3x - (4 + 2x)$$

$$5x - 15 + 3 = 3x - 4 - 2x$$

$$\begin{array}{rcl} 5x - 12 & = & x - 4 \\ -x & & -x \end{array}$$

$$\begin{array}{rcl} 4x - 12 & = & -4 \\ +12 & & +12 \end{array}$$

$$\frac{4x}{4} = \frac{8}{4}$$

$$\boxed{x = 2}$$

$$9) \quad 7x - 2(x-5) = -3x + 2(x-4)$$

$$7x - 2x + 10 = -3x + 2x - 8$$

$$\begin{array}{rcl} 5x + 10 & = & -x - 8 \\ +x & & +x \end{array}$$

$$\begin{array}{rcl} 6x + 10 & = & -8 \\ -10 & & -10 \end{array}$$

$$\frac{6x}{6} = \frac{-18}{6}$$

$$\boxed{x = -3}$$