

Résoudre

$$7x - 4 = 5x + 6$$

on veut $x = ?$

Les x à gauche

Les sans x à droite

$$x = 5$$

$$7x - 5x = 6 + 4$$

$$2x = 10$$

$$x = \frac{10}{2}$$

$$x = 5$$

$$S = \{5\}$$

Résoudre =

$$3 - 2x = -9 + 3x$$

$$-2x - 3x \quad | \quad -9 - 3$$

$$-5x \quad | \quad -12$$

$$x \quad | \quad = \frac{-12}{-5}$$

$$x \quad | \quad = \frac{12}{5}$$

$$S = \left\{ \frac{12}{5} \right\}$$

Resoudre

$$3x - 2x + 8 = 5 + 4 - 8x$$

$$3x - 2x + 8x = 5 + 4 - 8$$

$$9x = 1$$

$$x = \frac{1}{9}$$

$$S = \left\{ \frac{1}{9} \right\}$$

Résoudre

$$4 - (3x + 1) = 3(x + 5)$$

$$4 - 3x - 1 = 3x + 15$$

$$-3x - 3x = -4 + 1 + 15$$

$$-6x = 12$$

$$x = \frac{12}{-6}$$

$$x = -2$$

$$S = \{-2\}$$

Résoudre

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

$$3x+1 = 0 \quad \text{ou} \quad x-5 = 0$$

$$3x = -1$$

$$x = 5$$

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

$$S = \left\{ -\frac{1}{3}; 5 \right\}$$

Résoudre

$$(3x+7)(4x-8) = 0$$

$$3x+7=0 \quad \text{ou} \quad 4x-8=0$$

$$3x = -7$$

$$x = -\frac{7}{3}$$

$$4x = 8$$

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

$$x = 2$$

$$S = \left\{ -\frac{7}{3}; 2 \right\}$$

Identités remarquables

$$\begin{aligned}(2x+8)^2 &= (2x)^2 + 2 \times 2x \times 8 + 8^2 \\ &= 4x^2 + 32x + 64\end{aligned}$$

$$\begin{aligned}(2x-8)^2 &= (2x)^2 - 2 \times 2x \times 8 + 8^2 \\ &= 4x^2 - 32x + 64\end{aligned}$$

$$(2x+8)(2x-8) = (2x)^2 - 8^2 = 4x^2 - 64$$

$$(a+b)^2 = \underbrace{a^2} + \underbrace{2ab} + \underbrace{b^2}$$

$$(a-b)^2 = \underbrace{a^2} - \underbrace{2ab} + \underbrace{b^2}$$

$$(a-b)(a+b) = a^2 - b^2$$

Factoriser

$$f(x) = (3x+2)(4x-2) + (4x-2)(x-6)$$

$$f(x) = (4x-2) [(3x+2) + (x-6)]$$

$$f(x) = (4x-2) (3x+2+x-6)$$

$$f(x) = (4x-2) (4x-4)$$

Factoriser

$$f(x) = \underbrace{(7x-2)} \cdot (2-3x) + (4x+3) \cdot \underbrace{(7x-2)}$$

$$f(x) = (7x-2) \left[(2-3x) + (4x+3) \right]$$

$$f(x) = (7x-2) (2-3x+4x+3)$$

$$f(x) = (7x-2) (x+5)$$

Factoriser

$$f(x) = \underline{(9x-4)} (-2+5x) - \underline{(9x-4)} (3x-5)$$

$$f(x) = (9x-4) [(-2+5x) - (3x-5)]$$

$$f(x) = (9x-4) (-2+5x-3x+5)$$

$$f(x) = (9x-4) (2x+3)$$

Factoriser

$$f(x) = 4x^2 + 4x + 1$$

\downarrow \downarrow

a^2 b^2

\downarrow \downarrow

$a = 2x$ $b = 1$

$$(a+b)^2 = ?$$

donc $f(x) = (2x + 1)^2$

$$(2x + 1)^2 = (2x)^2 + 2 \times 2x \times 1 + 1^2$$