

Outils : produits remarquables

$$81 = x^2$$

$$\frac{81}{9} - \frac{x^2}{x} = 0$$

$$(9 + x)(9 - x) = 0$$

$$9 + x = 0 \quad \text{ou} \quad 9 - x = 0$$

$$\boxed{x = -9} \quad \text{ou} \quad -x = -9$$

$$\boxed{x = 9}$$

$$S = \{-9; 9\}$$

$$3x^2 = 75$$

$$\frac{3x^2}{3} - \frac{75}{3} = 0$$

$$3(x^2 - 25) = 0$$

$$\downarrow \quad \downarrow$$
$$x \quad 5$$

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

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

$$x = -5 \quad \text{ou} \quad x = 5$$

$$S = \{5; -5\}$$

Divers

$$20x^2 + 45 = 60x$$

$$20x^2 - 60x + 45 = 0$$

$$5(4x^2 - 12x + 9) = 0$$

↓

$$\frac{4x^2}{2x} - 12x + \frac{9}{3} = 0$$

$$\begin{array}{c} \uparrow? \\ 2 \cdot 2x + 3 \\ (2x - 3)^2 = 0 \end{array}$$

$$2x - 3 = 0$$

$$2x = 3$$

$$x = \frac{3}{2}$$

$$S' = \left\{ \frac{3}{2} \right\}$$

Solution
(racine double).

Divers

$$g(2x+6) = 2(x+11) - 2x^2$$

$$18x + 54 = 2x + 22 - 2x^2$$

$$18x + 54 - 2x - 22 + 2x^2 = 0$$

$$16x + 32 + 2x^2 = 0$$

$$2(8x + 16 + x^2)$$

$$2(x+4)^2 = 0$$

$$(x+4) = 0$$

Hence Sol: $\{-4\}$

$$(x+5)(2-7x) = (7x-2)(2x+3)$$

$$(2-7x)(x+5) + 2x+3 = 0$$

$$(2-7x)(x+5+2x+3) = 0$$

$$(2-7x)(3x+8) = 0$$

$$2-7x=0 \quad 3x+8=0$$

$$-7x = -2$$

$$3x = -8$$

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

$$x = \frac{-8}{3}$$

$$S = \left\{ \frac{2}{7}, \frac{-8}{3} \right\}$$

$$81x^2 + 54x = -9$$

$$81x^2 + 54x + 9 = 0$$

$$9(9x^2 + 6x + 1) = 0$$

↓

$$\frac{9x^2}{3x} + 6x + \frac{1}{1} = 0$$

3x

↑

↓

→ 2 · 3x · 1 ↓

$$(3x + 1)^2 = 0$$

$$3x + 1 = 0$$

$$3x + 1 = 0$$

$$3x = -1$$

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

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

