

Correctifs exercices mélangés niveau 1 :

A l'aide de l'ordinogramme, résous les équations suivantes :

$$1) \quad x^2 - 16 = 0 \Leftrightarrow x^2 = 16 \Leftrightarrow x = \pm\sqrt{16} \quad S = \{-4; 4\}$$

$$2) \quad 2x^2 - 7x + 3 = 0 \quad \Delta = 49 - 4.2.3 = 49 - 24 = 25 \quad x_1 \text{ et } x_2 = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{7 \pm 5}{4} \quad S = \left\{\frac{1}{2}; 3\right\}$$

$$3) \quad 3 + 4x^2 - 5x = 0 \quad \Delta = 25 - 4.4.3 = 25 - 48 = -23 < 0 \text{ donc } S = \{ \}$$

$$4) \quad 4x^2 + 12x + 9 = 0 \Leftrightarrow (2x + 3)^2 = 0 \quad S = \left\{-\frac{3}{2}\right\}$$

$$5) \quad 0,04x^2 + 0,09 = 0,12x \Leftrightarrow 0,04x^2 - 0,12x + 0,09 = 0 \Leftrightarrow (0,2x + 0,3)^2 = 0 \quad S = \left\{\frac{3}{2}\right\}$$

$$6) \quad 6x^2 - 7 = 4x^2 + 1 \Leftrightarrow 6x^2 - 4x^2 - 7 - 1 = 0 \Leftrightarrow 2x^2 - 8 = 0 \Leftrightarrow 2x^2 = 8 \Leftrightarrow x^2 = 4 \\ \Leftrightarrow x = \pm\sqrt{4} \quad S = \{-2; 2\}$$

$$7) \quad 28x - 4x^2 = 49 \Leftrightarrow -4x^2 + 28x - 49 = 0 \Leftrightarrow -(4x^2 - 28x + 49) = 0 \\ \Leftrightarrow -(2x - 7)^2 = 0 \quad S = \left\{\frac{7}{2}\right\}$$

$$8) \quad \frac{5}{4} = x\sqrt{5} - x^2 \Leftrightarrow x^2 - x\sqrt{5} + \frac{5}{4} = 0 \Leftrightarrow \left(x - \frac{\sqrt{5}}{2}\right)^2 = 0 \quad S = \left\{\frac{\sqrt{5}}{2}\right\}$$

$$9) \quad x^2 + 8x + 12 = 0 \Leftrightarrow (x + 2)(x + 6) = 0 \text{ (car } S \text{ et } P) \quad S = \{-6; -2\}$$

$$10) \quad -x^2 + 5x + 6 = 0 \Leftrightarrow -(x^2 - 5x - 6) = 0 \Leftrightarrow -(x - 6)(x + 1) = 0 \quad S = \{-1; 6\}$$

$$11) \quad (x - 24)(x + 2) = 0 \quad S = \{-2; 24\}$$

$$12) \quad 9x^2 - 49 = 0 \Leftrightarrow 9x^2 = 49 \Leftrightarrow x^2 = \frac{49}{9} \Leftrightarrow x = \pm\frac{7}{3} \quad S = \left\{-\frac{7}{3}; \frac{7}{3}\right\}$$

$$13) \quad 4x^2 + 2x = 0 \Leftrightarrow 2x(2x + 1) = 0 \quad S = \left\{-\frac{1}{2}; 0\right\}$$

$$14) \quad 5x^2 + 34x - 7 = 0 \quad \Delta = 1156 + 4.5.7 = 1296 \quad x_1 \text{ et } x_2 = \frac{-34 \pm 36}{10} \quad S = \left\{-7; \frac{1}{5}\right\}$$

$$15) \quad (2x + 3)(x + 1) = (x - 5)(x + 1) \Leftrightarrow (2x + 3)(x + 1) - (x - 5)(x + 1) = 0$$

$$(x+1)(2x+3-x+5)=0 \Leftrightarrow (x+1)(x+8)=0 \quad S=\{-8; -1\}$$

$$16) -3x^2 + x = 0 \Leftrightarrow x(-3x+1)=0 \quad S=\left\{0; \frac{1}{3}\right\}$$

$$17) 3x^2 - \sqrt{5}x + 4 = 0 \quad \Delta = 5 - 4 \cdot 3 \cdot 4 < 0 \quad S = \{ \quad \}$$

$$18) 169 = x^4 \Leftrightarrow x^2 = \pm\sqrt{169} = \pm 13 \quad \text{je continue avec } x^2 = 13 \text{ car } -13 \text{ pas possible ,}$$

$$x = \pm\sqrt{13} \quad S = \{-\sqrt{13}; \sqrt{13}\}$$

$$19) 50x^8 - 8x^4 = 0 \Leftrightarrow 2x^4(25x^4 - 4) = 0 \Leftrightarrow 2x^4(5x^2 - 2)(5x^2 + 2) = 0 \Leftrightarrow 2x^4(\sqrt{5}x -$$

$$\sqrt{2})(\sqrt{5}x + \sqrt{2})(5x^2 + 2) = 0 \quad S = \left\{-\sqrt{\frac{2}{5}}; 0; \sqrt{\frac{2}{5}}\right\}$$

$$20) 144x^3 - 196x = 0 \Leftrightarrow x(144x^2 - 196) = 0 \Leftrightarrow x(12x - 14)(12x + 14) = 0 \quad S =$$

$$\left\{-\frac{7}{6}; 0; \frac{7}{6}\right\}$$

$$21) 9x^2 = (x+1)^2 \Leftrightarrow 9x^2 - (x+1)^2 = (3x-x-1)(3x+x+1) = 0 \Leftrightarrow$$

$$(2x-1)(4x+1) = 0 \quad S = \left\{-\frac{1}{4}; \frac{1}{2}\right\}$$

$$22) (x-3) + 2(x-3) = 0 \Leftrightarrow 3(x-3) = 0 \quad S = \{3\}$$

$$23) 4(x+2) = (x+2) \Leftrightarrow 3(x+2) = 0 \quad S = \{-2\}$$