

ALGEBRE : Equations-inéquations

Exercices de remédiation

ENONCES

Résoudre

$$1. \frac{2x+5}{2x-5} + \frac{x+1}{x+3} - \frac{20x+27}{-2x^2-x+15} = 0$$

$$2. 36(1-4x)^3 = 4(x-1)^2(4x-1)^2$$

$$3. \frac{x+3}{2x} - \frac{1-x}{x^2} - \frac{5x+2}{3-x} - \frac{11x^3+5x^2-15x-9}{2x^3-6x^2} = 0$$

$$4. (3x^2-5)^5(1-x)^4 - 2(5-3x^2)^4(x-1)^5 = 0$$

$$5. \frac{3x-1}{2x} - \frac{4x^2+1}{x^2} < \frac{4(3x-1)}{2x^2}$$

$$6. \frac{-7x^9(-2x-3)^5}{(-x^2-2x-7)(-x+1)^4} \leq 0$$

SOLUTIONS

1.

$$\frac{2x+5}{2x-5} + \frac{x+1}{x+3} - \frac{20x+27}{-2x^2-x+15} = 0$$

$$\frac{2x+5}{2x-5} + \frac{x+1}{x+3} - \frac{20x+27}{-2(x-\frac{5}{2})(x+3)} = 0$$

$$\frac{2x+5}{2x-5} + \frac{x+1}{x+3} + \frac{20x+27}{(2x-5)(x+3)} = 0$$

$$CE : x \neq \frac{5}{2} \text{ et } x \neq -3$$

$$(2x+5)(x+3) + (x+1)(2x-5) + (20x+27) = 0$$

$$4x^2 + 28x + 37 = 0$$

$$\Delta = 192$$

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

2. $36(1-4x)^3 = 4(x-1)^2(4x-1)^2$

$$4(1-4x)^2 [9(1-4x) - (x-1)^2] = 0$$

$$4(1-4x)^2 (-x^2 - 34x + 8) = 0$$

$$S = \left\{ -17 \pm 3\sqrt{33}, \frac{1}{4} \right\}$$

3.

$$\frac{x+3}{2x} - \frac{1-x}{x^2} - \frac{5x+2}{3-x} - \frac{11x^3+5x^2-15x-9}{2x^3-6x^2} = 0$$

$$\frac{x+3}{2x} - \frac{1-x}{x^2} - \frac{5x+2}{3-x} - \frac{11x^3+5x^2-15x-9}{2x^2(x-3)} = 0$$

$$CE : x \neq 0; 3; 6 \quad \text{dén commun: } 2x^2(3-x)$$

$$(x+3)x(3-x) - (1-x)(2)(3-x) - (5x+2)(2x^2) + (11x^3+5x^2-15x-9) = 0$$

$$9x - x^3 - 6 + 2x + 6x - 2x^2 - 10x^3 - 4x^2 + 11x^3 + 5x^2 - 15x - 9 = 0$$

$$-x^2 + 2x - 15 = 0$$

$$\Delta < 0$$

$$S = \emptyset$$

4. $(3x^2-5)^5(1-x)^4 - 2(5-3x^2)^4(x-1)^5 = 0$

$$(3x^2-5)^4(x-1)^4 [(3x^2-5) - 2(x-1)] = 0$$

$$(3x^2-5)^4(x-1)^4(3x^2-2x-3) = 0$$

$$S = \left\{ \pm \sqrt{\frac{5}{3}}, 1, \frac{1 \pm \sqrt{10}}{3} \right\}$$

5.

$$\frac{3x-1}{2x} - \frac{4x^2+1}{x^2} < \frac{4(3x-1)}{2x^2}$$

$$\frac{3x^2 - x - 8x^2 - 2 - 12x + 4}{2x^2} < 0$$

$$\frac{-5x^2 - 13x + 2}{2x^2} < 0$$

$$S =]-\infty, \frac{13 + \sqrt{209}}{-10} [\cup] \frac{13 - \sqrt{209}}{-10}, +\infty [$$

$$6. \quad \frac{-7x^9(-2x-3)^5}{(-x^2-2x-7)(-x+1)^4} \leq 0$$

$$S =]-\infty, -\frac{3}{2}] \cup [0, 1[\cup]1, +\infty [$$