

Exercice 6

Résoudre les inéquations suivantes :

1. $3x^2 - 5x + 2 > 0$

$$\Delta = b^2 - 4ac$$

$$= 25 - 4 \times 3 \times 2$$

$$= 25 - 24$$

$$= 1 > 0$$

$$x_1 = \frac{-b - \sqrt{\Delta}}{2a} = \frac{5 - 1}{6}$$

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

$$x_2 = \frac{-b + \sqrt{\Delta}}{2a} = \frac{5 + 1}{6} = 1$$

x	$-\infty$	$\frac{2}{3}$	1	$+\infty$	
sign	+	0	-	0	+

$$\Delta =]-\infty; \frac{2}{3}[\cup]1; +\infty[$$

Equations

$$\bullet (1-x)(-5x^2 + 26x - 5) = 0$$

$$1 - x = 0$$

$$-x = -1$$

$$x = 1$$

$$-5x^2 + 26x - 5 = 0$$

$$\Delta = b^2 - 4ac$$

$$= 676 - 4 \times (-5) \times (-5)$$

$$= 676 - 100$$

$$= 576 > 0$$

$$x_1 = \frac{-b - \sqrt{\Delta}}{2a} = \frac{-26 - 24}{-10} = 5$$

$$x_2 = \frac{-b + \sqrt{\Delta}}{2a} = \frac{-26 + 24}{-10} = \frac{1}{5}$$

$$\text{done } \mathcal{S} = \left\{ 1; 5; \frac{1}{5} \right\}.$$

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

$$-5x + 2 = 0$$

$$3x - 7 = 0$$

$$-5x = -2$$

$$3x = 7$$

$$x = \frac{2}{5}$$

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

$$\text{donc } \mathcal{S} = \left\{ \frac{2}{5}; \frac{7}{3} \right\}.$$

$$\cdot \frac{2x + 1}{3 - x} = 2$$

$\Leftrightarrow$

$$2x + 1 = 2(3 - x)$$

$$\Leftrightarrow 2x + 1 = 6 - 2x$$

$$\Leftrightarrow 4x - 5 = 0$$

$$\Leftrightarrow 4x = 5$$

$$\Leftrightarrow x = \frac{5}{4}$$

$$\text{donc } \Delta = \left\{ \frac{5}{4} \right\}$$

$$\bullet \frac{4}{7x-7} = \frac{8}{3x-3}$$

$$\Rightarrow 4(3x-3) = 8(7x-7)$$

$$\Rightarrow 12x - 12 = 56x - 56$$

$$\Leftrightarrow 12x - 12 - 56x + 56 = 0$$

$$\Leftrightarrow -44x + 44 = 0$$

$$\Leftrightarrow -44x = -44$$

$$\Leftrightarrow x = 1.$$

Inēquation

$$\bullet (2x + 4)(-3x + 1) > 0.$$

$$2x + 4 = 0 \qquad -3x + 1 = 0$$

$$\Leftrightarrow 2x = -4 \qquad \Leftrightarrow -3x = -1$$

$$\Leftrightarrow x = -2 \qquad \Leftrightarrow x = \frac{1}{3}$$

$$\cdot (3x^2 - 5x + 2)(2x - 1) < 0$$

$$\cdot \frac{2x + 3}{x - 1} > 0$$