

• Sesión 21 de abril

1. $x^2 - 6x + 8 > 0$

a) $x^2 - 6x + 8 = 0$

$(x-4)(x-2) = 0$

$x = 4 \vee x = 2$

b)

		2		4	
$x-4$	-		-		+
$x-2$	-		+		+
Todo	+		-		+

$S: x \in]-\infty, 2[\cup]4, \infty[$

2. $x^4 + 12x^3 - 64x^2 \geq 0$

a.) $x^4 + 12x^3 - 64x^2 = 0$

$x^2(x^2 + 12x - 64) = 0$

$x = 0 \vee x^2 + 12x - 64 = 0$

$\vee (x+16)(x-4) = 0$

$x = 0 \vee x = -16 \vee x = 4$

b.)

		-16		0		4	
x^2	+		+		+		+
$x+16$	-		+		+		+
$x-4$	-		-		-		+
Todo	+		-		-		+

$S: x \in]-\infty, -16] \cup [4, \infty[$

3. $x^4 - 16x^2 - 225 \leq 0$

a. $x^4 - 16x^2 - 225 = 0$

$x^4 + 9x^2 - 25x^2 - 225 = 0$

$x^2(x^2 + 9) - 25(x^2 + 9) = 0$

$(x^2 + 9)(x^2 - 25) = 0$

≥ 0

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

$x = 5 \vee x = -5$

b.)

		-5		5	
$x+5$	-		+		+
$x-5$	-		-		+
Todo	+		-		+

$S: x \in [-5, 5]$

4. $\left| \frac{x+2}{x-6} \right| - \left| \frac{x-1}{x-3} \right| < 0 \quad R = \mathbb{R} - \{6\} - \{3\}$

a. $\left| \frac{x+2}{x-6} \right| - \left| \frac{x-1}{x-3} \right| = 0$

$\frac{|x+2|}{|x-6|} - \frac{|x-1|}{|x-3|} = 0$

$|x+2||x-3| = |x-1||x-6| \quad |x| = x^2$

$(x+2)^2(x-3)^2 = (x-1)^2(x-6)^2$

$(x^2 + 4x + 4)(x^2 - 6x + 9) = (x^2 - 2x + 1)(x^2 - 12x + 36)$

$x^4 - 2x^3 - 11x^2 + 12x + 36 = x^4 - 14x^3 + 61x^2 - 84x + 36$

$12x^3 - 72x^2 + 96x = 0$

$x^3 - 6x^2 + 8x = 0$

$x(x-2)(x-4) = 0$

$x = 0 \vee x = 2 \vee x = 4$

b.

		0		2		4	
x	-		+		+		+
$x-2$	-		-		+		+
$x-4$	-		-		-		+
Todo	-		+		-		+

$S = x \in]-\infty, 0[\cup]2, 4[- \{3\}$

$x \in]-\infty, 0[\cup]2, 3[\cup]3, 4[$