

16/3/2021

**296**  $(-2x^2 + 3x)(x^2 - x - 2) < 0$

$$-x(2x-3)(x-2)(x+1) < 0$$

$$x(2x-3)(x-2)(x+1) > 0$$

e si può risolvere studiando ogni singola fattore...

Un'alternativa

$$\underbrace{(-2x^2 + 3x)}_{\boxed{1}} \underbrace{(x^2 - x - 2)}_{\boxed{2}} < 0$$

$\boxed{1} \quad -2x^2 + 3x > 0$

$2x^2 - 3x < 0$

$x(2x-3) < 0$

$x_1 = 0 \quad x_2 = \frac{3}{2}$

$0 < x < \frac{3}{2}$

$\boxed{2} \quad x^2 - x - 2 > 0$

$x_{1,2} = \frac{1 \pm \sqrt{1+8}}{2} = \frac{1 \pm 3}{2} = \begin{cases} -1 \\ 2 \end{cases}$

$x < -1 \vee x > 2$

$\boxed{1} \quad 0 < x < \frac{3}{2}$

$\boxed{2} \quad x < -1 \vee x > 2$

$x < -1 \vee 0 < x < \frac{3}{2} \vee x > 2$

	-1	0	$\frac{3}{2}$	2	
-	-	0	+	0	-
+	0	-	-	-	0
⊖	0	+	0	⊖	+

319

$$(x-2)^2 - x^3 + 4x \geq 0$$

$$x^2 - \cancel{4x} + 4 - x^3 + \cancel{4x} \geq 0$$

$$-x^3 + x^2 + 4 \geq 0$$

$$x^3 - x^2 - 4 \leq 0$$

$$\pm 1 \pm 2 \pm 4$$

$$\begin{array}{c|ccc|c} & 1 & -1 & 0 & -4 \\ 2 & & 2 & 2 & 4 \\ \hline & 1 & 1 & 2 & // \end{array}$$

$$(x-2)(x^2+x+2) \leq 0$$

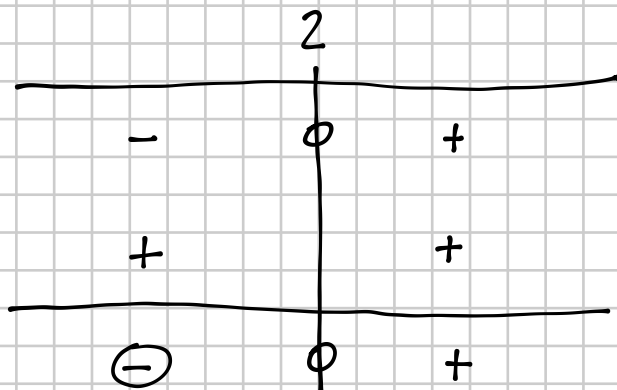
①

②

$$\textcircled{1} \quad x-2 > 0 \quad x > 2$$

$$\textcircled{2} \quad x^2+x+2 > 0 \quad \forall x \in \mathbb{R}$$

$$\Delta = 1 - 4 \cdot 2 = -7 < 0$$



$$\boxed{x \leq 2}$$

### OSSERVAZIONE

Alla stessa risultato sarei giunto semplificando

$$(x-2)(\cancel{x^2+x+2}) \leq 0 \Rightarrow x-2 \leq 0 \Rightarrow x \leq 2$$

↑  
perché  $\Delta < 0$

e  $x^2+x+2$  è

SEMPRE POSITIVO, quindi

non influisce nel segno del polinomio

(RAGIONAMENTO DA  
FARE IN FUTURO, NON  
ADESSO!!!)

$$320 \quad (5x - 2)^3 - 25x^2 + 4 > 0$$

$$(5x - 2)^3 - (25x^2 - 4) > 0$$

$$(5x - 2)^3 - (5x - 2)(5x + 2) > 0$$

$$(5x - 2) \left[ (5x - 2)^2 - (5x + 2) \right] > 0$$

$$(5x - 2) (25x^2 + 4 - 20x - 5x - 2) > 0$$

$$\underbrace{(5x - 2)}_{[1]} \underbrace{(25x^2 - 25x + 2)}_{[2]} > 0$$

$$[1] \quad 5x - 2 > 0 \quad x > \frac{2}{5}$$

$$[2] \quad 25x^2 - 25x + 2 > 0 \quad \Delta = (-25)^2 - 4 \cdot 25 \cdot 2 =$$

$$= 625 - 200 = 425 = 5^2 \cdot 17$$

$$x_{1,2} = \frac{25 \pm 5\sqrt{17}}{50} =$$

$$= \frac{\cancel{5}(5 \pm \sqrt{17})}{\cancel{50}_{10}} = \frac{5 \pm \sqrt{17}}{10}$$

$$\begin{array}{r|l} 425 & 5^2 \\ 17 & 17 \\ 1 & \end{array}$$

$$x < \frac{5 - \sqrt{17}}{10} \quad \vee \quad x > \frac{5 + \sqrt{17}}{10}$$

1

2

$\frac{5-\sqrt{17}}{10}$			$\frac{2}{5}$	$\frac{5+\sqrt{17}}{10}$		
-		-	0	+		+
+	0	-		-	0	+
-	0	(+)	0	-	0	(+)

$$\frac{5-\sqrt{17}}{10} < x < \frac{2}{5} \vee x > \frac{5+\sqrt{17}}{10}$$