

# EXEMPLO 4



Estudar o crescimento e decrescimento da função  $f(x) = -x^4 + x^3$ .

$$f'(x) = -4x^3 + 3x^2$$

$$-4x^3 + 3x^2 = 0$$

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

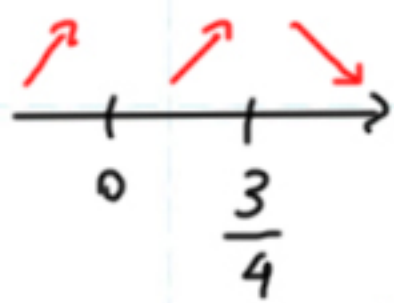
$$x^2 = 0 \quad \text{ou} \quad -4x + 3 = 0$$

$$x = 0$$

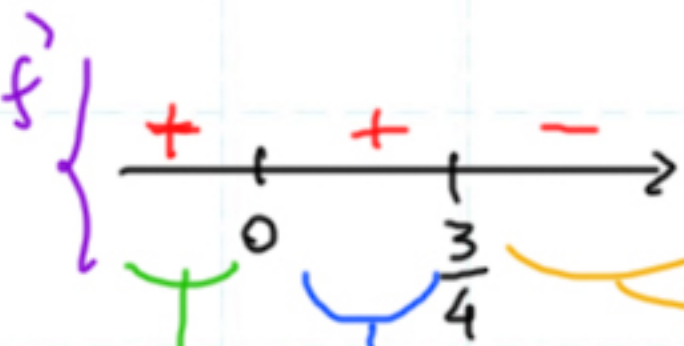
$$-4x = -3$$

$$x = \frac{-3}{-4}$$

$$x = \frac{3}{4}$$



$\uparrow$



$$x = -1$$
$$-4 \cdot (-1)^3 + 3 \cdot (-1)^2 =$$
$$= 4 + 3 = \textcircled{+} 7$$

$$x = \frac{1}{2}$$
$$-4 \left(\frac{1}{2}\right)^3 + 3 \left(\frac{1}{2}\right)^2 =$$
$$= -4 \cdot \frac{1}{8} + 3 \cdot \frac{1}{4} = -\frac{1}{2} + \frac{3}{4} = \textcircled{+} \frac{1}{4}$$

$$x = 1$$
$$-4 \cdot 1^3 + 3 \cdot 1^2 =$$
$$= -4 + 3 = \textcircled{-} 1$$

