

$$D: (-\infty, \infty)$$

3

$$f(x) = 3x^4 + 4x^3$$

$$3x^4 + 4x^3 = x^3(3x + 4)$$

INTERSECCOES  $f(0) = 0 \rightarrow (0, 0)$

$$f(x) = 0 \Rightarrow 3x^4 - 4x^3 = 0 \Rightarrow x^3(3x - 4) = 0$$

$$x = 0 \quad x = \frac{4}{3}$$

POLINÔMIOS  $\rightarrow$  SEM ASSÍNTOTAS

$$(0, 0) \quad (4/3, 0)$$

lim  $f(x) = \infty$  ; lim  $f(x) = \infty$   
 $x \rightarrow \infty$  ;  $x \rightarrow -\infty$

$$f'(x) = 12x^3 + 12x^2 = 0$$

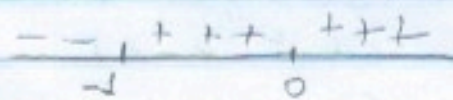
$$12x^2(x+1) = 0$$

$$x_1 = 0 \quad x_2 = -1$$

$$f'(-2) = -48$$

$$f'(-1/2) = 1,5$$

$$f'(1) = 24$$



MIN

DECRESC.  $(-\infty, -1)$

CRESC.  $(-1, \infty)$

$$f(-1) = -1$$

$$f(0) = 0$$

$$f''(x) = 36x^2 + 24x = 0$$

$$12x(3x+2) = 0$$

$$x_1 = 0 \quad x_2 = -2/3$$

$$f''(-1) = 60$$

$$f''(-0,5) = -3$$

$$f''(1) = 60$$



CONC  $\uparrow$   $(-\infty, -2/3)$   $(0, \infty)$

CONC  $\downarrow$   $(-2/3, 0)$

$$\begin{cases} f(-2/3) = -16/27 \\ f(0) = 0 \end{cases}$$

