

$$y = x^4 - 4x^3$$

$$0 = 4x^3 - 12x^2$$

$$0 = 4x^2(x-3)$$

$$\begin{array}{c} \text{---} \quad \text{---} \quad \text{---} \quad \text{---} \\ | \quad | \quad | \quad | \\ \hline f'(-1) \quad 0 \quad f'(1) \quad 3 \quad f'(4) \end{array}$$

$$0 = x^3(x-4)$$

$$0, 4$$

$$0 = 12x^2 - 24x$$

$$0 = 12x(x-2)$$

$$\begin{array}{c} \text{---} \quad \text{---} \quad \text{---} \\ | \quad | \quad | \\ \hline f'(-1) \quad 0 \quad 2 \end{array}$$

$$\underline{\underline{\text{Ex}}} \quad f(x) = 2x^3 - 3x^2 - 12x + 5$$

$$0 = 6x^2 - 6x - 12$$

$$0 = 6(x^2 - x - 2)$$

$$0 = 6(x-2)(x+1)$$

$$x = 2, -1$$

$$\begin{array}{c} + \quad \quad - \quad \quad + \\ \hline f'(2) \quad -1 \quad f'(0) \quad 2 \quad f'(3) \end{array}$$

$$0 = 12x - 6$$

$$6 = 12x$$

$$\frac{1}{2} = x$$

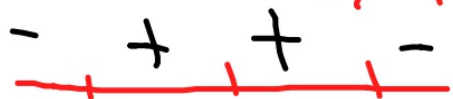
$$\begin{array}{c} - \quad \quad + \\ \hline f'(0) \quad \frac{1}{2} \quad f'(1) \end{array}$$

$$\text{Ex. } f(x) = -3x^5 + 5x^3$$

$$0 = -15x^4 + 15x^2$$

$$0 = -15x^2(x^2 - 1)$$

$$0 \quad 1, -1$$



$$f'(-2) \quad | \quad f'(-1) \quad | \quad 0 \quad | \quad f'(1) \quad | \quad f'(2)$$

$$0 = -60x^3 + 30x$$

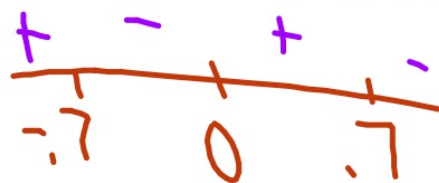
$$0 = -30x(x^2 - 1)$$

$$0 \quad 2x^2 - 1 = 0$$

$$2x^2 = 1$$

$$\sqrt{2x^2} = \sqrt{\frac{1}{2}}$$

$$x = \pm .71$$



$$\text{Ex. } f(x) = \frac{x^2 + 1}{x^2 - 4}$$

$$0 = \frac{(x^2 - 4)(2x) - (x^2 + 1)(2x)}{(x^2 - 4)^2}$$

$$0 = \frac{2x^3 - 8x - 2x^3 - 2x}{(x^2 - 4)^2}$$

$$= \frac{-10x}{(x^2 - 4)^2}$$

$$\begin{array}{ccccccc} + & & + & & - & & - \\ | & & | & & | & & | \\ f'(-3) & & f'(-1) & & 0 & & f'(1) & & f'(3) \end{array}$$

7-195

1-19 odd

(Not 17)

1-9 intervals

11-19 Draw

