

WARMUP

Find the extrema and inflection points for $f(x) = 2x^3 - 3x^2 - 12x + 8$.

Extrema

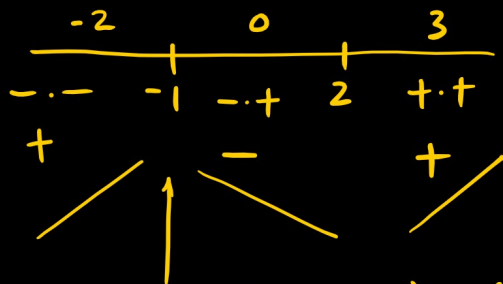
$$f'(x) = 6x^2 - 6x - 12 = 0$$

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

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

$$x = -1, x = 2$$

~~-2~~
~~-2~~ ~~1~~
~~-1~~



$$\text{max @ } (-1, f(-1)) = (-1, 15)$$

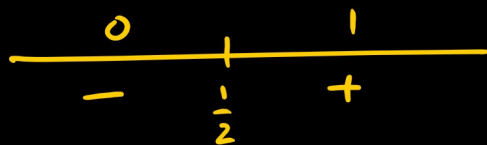
$$\text{min @ } (2, f(2)) = (2, -12)$$

Inflection Points

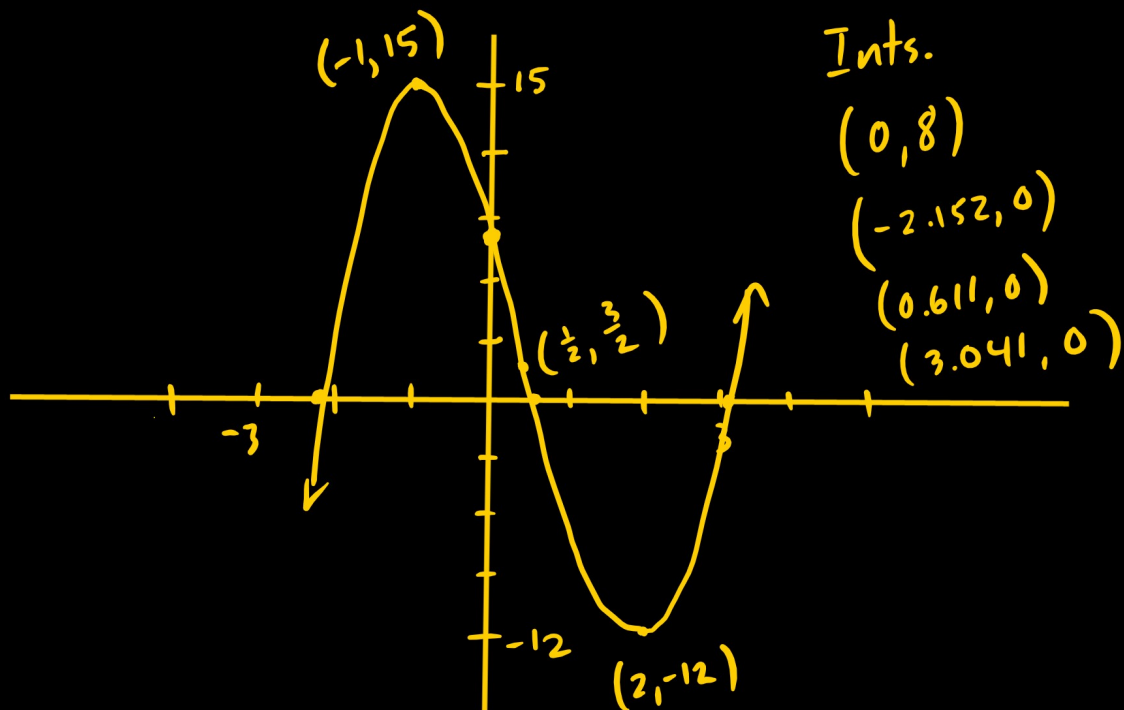
$$f''(x) = 12x - 6 = 0$$

$$12x = 6$$

$$x = \frac{6}{12} = \frac{1}{2}$$



$$\text{IP @ } \left(\frac{1}{2}, f\left(\frac{1}{2}\right)\right) = \left(\frac{1}{2}, \frac{3}{2}\right)$$



Ints.

$$(0, 8)$$

$$(-2.152, 0)$$

$$(0.611, 0)$$

$$(3.041, 0)$$

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

List intercepts (use calc.), extrema, and IPs
show work

and then graph it.

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

$$f'(x) = 3x^2 - 6x$$

$$f''(x) = 6x - 6$$

Extrema: $3x^2 - 6x$

$$3x(x-2)$$

$$3x=0$$

$$x-2=0$$

$$x=0$$

$$x=2$$

$$\text{max @ } (0, f(0)) = (0, 3)$$

$$\text{min @ } (2, f(2)) = (2, -1)$$

