Thursday 11/7/19

1. Grab Notes & Calc.
2. Start warm-up
3. Extrema Notes
4. HW

Topic: Extrema and Intervals **Name:** _____

What am I learning today?

Warm-Up:

Warm-up: State the whether the functions are even or odd, positive or negative and the maximum number of turns possible:

1) $g(x) = -5x^4 + 7x^3 + 2x^2 - 7$

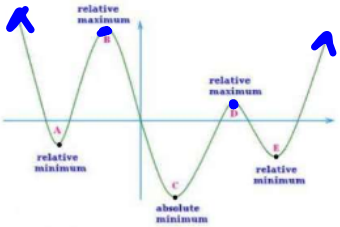
Degree: Even
LC: Neg.
Max # of turns: 3

2) $f(x) = 3x^2 - 4x^3 + 6x + 1$ $-4x^3 + 3x^2 + 6x + 1$

Degree: Odd
LC: Neg.
Max # of turns: 2

Vocabulary

Extrema



A relative minimum is the ordered pair that falls at the bottom of any curve on the graph. (there can be more than 1)

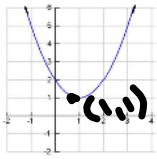
A relative maximum is the ordered pair that falls at the top of any curve on the graph. (there can be more than 1)

An absolute minimum is the lowest ordered pair on a graph. (there could be 1, none.
An absolute maximum is the highest ordered pair on a graph. (there could be 1, none)

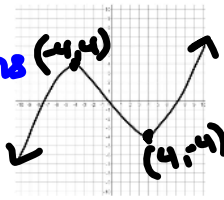
Examples

relative min — relative max —

absolute min (1,1) absolute max —



A Odd Functions = NO ABSOL.

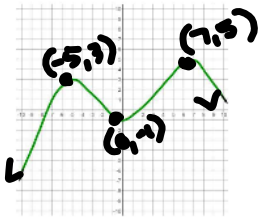


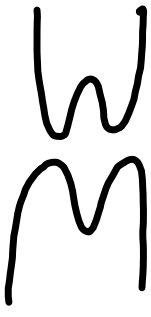
relative min (4,-4) relative max (-4,4)

absolute min — absolute max —

relative min (0,-1) relative max (-5,3)

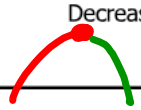
absolute min — absolute max (7,5)





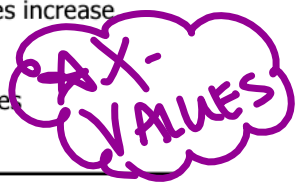
Topic: Extrema and Intervals **Date:** _____

Vocabulary
Intervals of Increasing and Decreasing



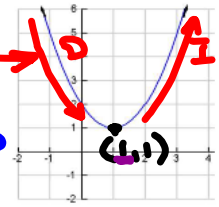
A function is Decreasing if y-values decrease as x-values increase (goes down from left to right)

A function is Increasing if y-values increase as x-values increase. (goes up from left to right)



Examples
Intervals of Increasing and Decreasing

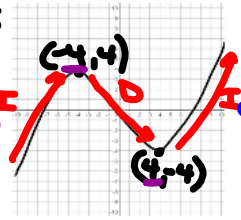
1) LABEL all max/min. points
2) underline x-values of max/min pts.
3) Determine I or D.
4) Start at $-\infty$ Work to ∞



Intervals of increasing $(1,\infty)$

Intervals of decreasing $(-\infty,1)$

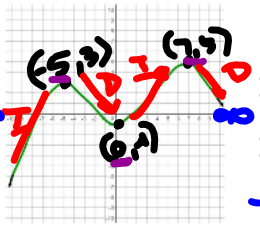
$-\infty$ D | 1 | I ∞



Intervals of increasing $(-\infty,-4)(4,\infty)$

Intervals of decreasing $(-4,4)$

$-\infty$ I | -4 | D | 4 | I ∞

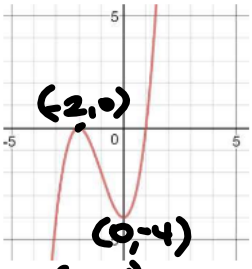


Intervals of increasing $(-\infty,-5)(0,7)$

Intervals of decreasing $(-5,0)(7,\infty)$

$-\infty$ I | -5 | D | 0 | I | 7 | D ∞

You Try!
Extrema and Intervals with review concepts



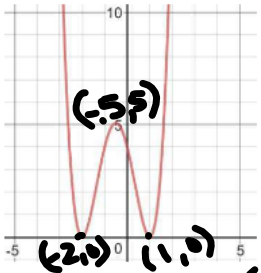
Relative Min: $(0,-4)$ Relative Max: $(-2,0)$

Absolute Min: — Absolute Max: —

Increase: $(-\infty,-2)$ $(0,\infty)$ Decrease: $(-2,0)$

LC: Pos. Degree: odd

X-Intercept(s): $(-2,0)$ Y-Intercept: $(0,-4)$



Relative Min: — Relative Max: $(-.5,5)$

Absolute Min: $(-2,0)$ $(1,0)$ Absolute Max: —

Increase: $(-2,-.5)$ $(1,\infty)$ Decrease: $(-\infty,-2)(-.5,1)$

LC: Pos. Degree: Even

X-Intercept(s): $(-2,0)$ $(1,0)$ Y-Intercept: $(0,4)$

Summary
Summarize the lesson in your own words