Aug 26-PreCalculus
- Calculator check
- Starter #3 and Factor Quiz
- Homework Questions
- 1.2 Part 2 Continuity, Inc/Dec/ Extrema,Bounded
- Pass back papers

HW pg 102 #21-46

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Grab a quiz from front table

Starter #3 Domain and Range

Use the back of your QUIZ paper. Write starter #3 on the back.

Use a calculator to help sketch the graph then find the Domain and Range of the functions.

$$f(x) = \sqrt{x+2} \qquad\qquad f(x) = \frac{x+1}{x-2}$$

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Homework Questions...

#12

$$\frac{1}{x} + \frac{5}{x-3}$$

Domain

$$x \neq 0 \qquad x-3=0$$
$$x \neq 3$$
$$(-\infty, 0) \cup (0, 3) \cup (3, \infty)$$

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#17 $10 - x^2$

$$R: (-\infty, 10]$$

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#11 $\dfrac{3x-1}{(x+3)(x-1)}$

$$x+3=0 \qquad x-1=0$$
$$-3 \;-3 \qquad +1 \;+1$$
$$x = -3 \qquad x \neq 1$$

$$D: (-\infty, -3) \cup (-3, 1) \cup (1, \infty)$$

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1.2 Part 2 Pg. 90-95
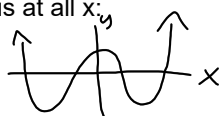
Continuity

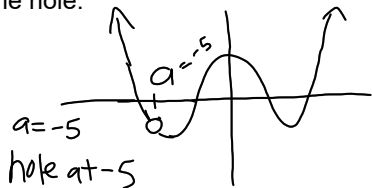Increasing/Decreasing

Extrema- Maximum/Minimum

Boundedness

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Continuity: a function is continuous at a point if the graph does not come apart at that point.
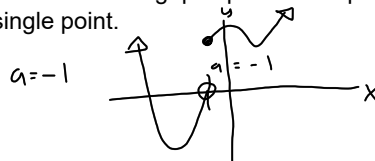
Continuous at all x:

Removable Discontinuity: the graph is continuous everywhere except for a hole where x=a. Can be patched by redefining f(a) to plug the hole.
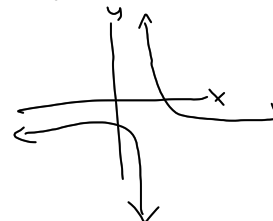

$a = -5$

hole at -5

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Jump Discontinuity: a jump in function values that makes the gap impossible to plug with a single point.

$a = -1$

Infinite Discontinuity: an x value (x=a) that is undefined for all y values of the function.

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Identifying Points of Discontinuity

Which of the following are discontiuous at x=2? Any removable?

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Increasing and Decreasing Functions

Increasing: if for any two points in the interval a positive change in x results in a positive change in f(x).
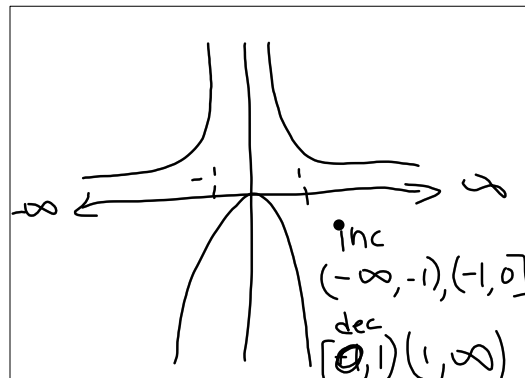
Decreasing: if for any two points in the interval a positive change in x results in a negative change in f(x).

Constant: if for any two points in the interval a positive change in x results in a zero change in f(x).

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$a: f(x) = (x+2)^2$

$(-\infty, -2] \quad [-2, \infty)$

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Inc
$(-\infty, -1), (-1, 0]$
dec
$[0, 1)(1, \infty)$
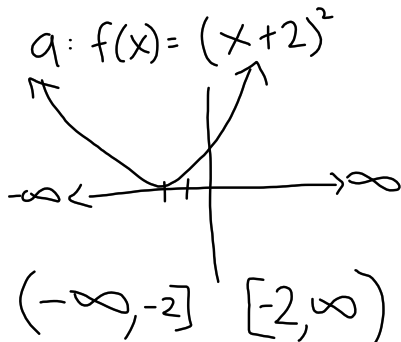
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Boundedness

**Bounded:** if it is bounded both above and below.

Bounded Below: if there is some number b that is less than or equal to every number in the range of f. Any such number b is called a **lower bound** of f. Valley ∪

Bounded Above: if there is some number B that is greater than or equal to every number in the range of f. Any such number B is called and **upper bound** of f. mountain ⋀
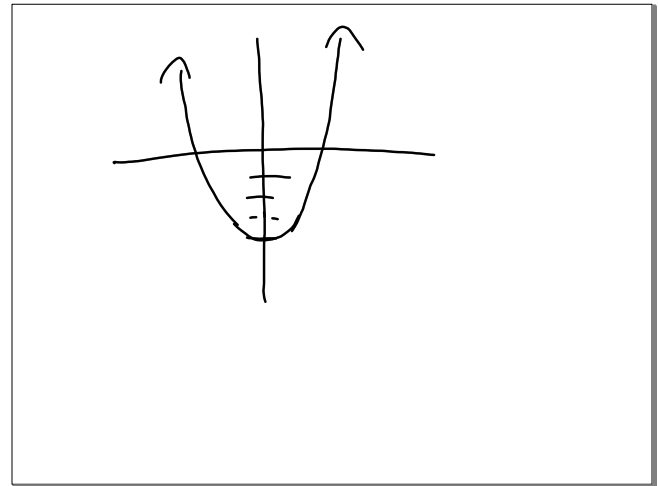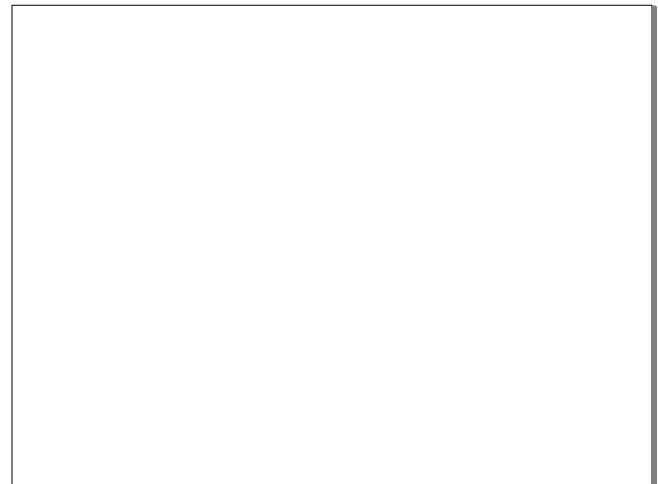
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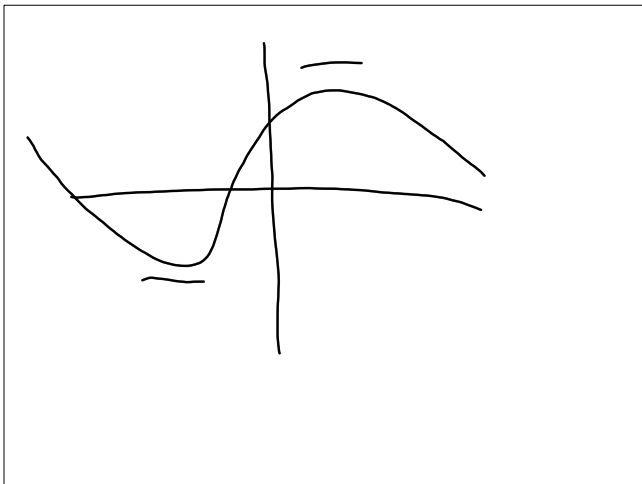
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Extrema:Maximum and Minimum

Maximum: is a value(c) that is greater than or equal to all the range values of f on some open interval containing the value(c).

Looks like a mountain

Minimum: is a value(c) that is less than or equal to all range values of f on some open interval containing the value(c).

Looks like a valley.

Exceptions: Square root, jump discontinuity

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Calculator Finding extrema(max/min)

$$10-x^2$$

$$max\ (0,10)$$

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3

#21 $\dfrac{3}{x}$

discontinuous at $x = 0$

non removable

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#22

Continuous at $x = 0$

removable

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#29

dec.

$(-\infty, -2)$

inc.

$(-2, \infty)$

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