1.1 Graphs of Functions

OBJ:

TODAY you will interpret and sketch Key features of graphs of functions.
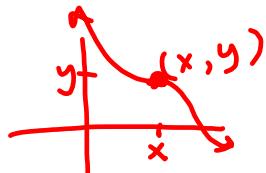
Key features include:
* intercepts
* intervals where increasing/decreasing
* relative max/min
* domain/range
* end behavior

Jul 25-7:39 AM

Function Review

(x, y) ordered pair

x input
y output

$y = \boxed{f(x)}$ "value of the function f for x"

"f of x"

$y = f(0)$ y-intercept $(0, f(0))$
$0 = f(x)$ x-intercept $(x, 0)$

Domain → set of allowed x's
Range → set of output
                    (graph)

Jul 25-7:51 AM

1

EX1) Use the graph of $f(x)$ to find the following

a) $f(1)$ 0

b) $f(-2)$ -1

c) $f(x) = -3$ $-5, 2$
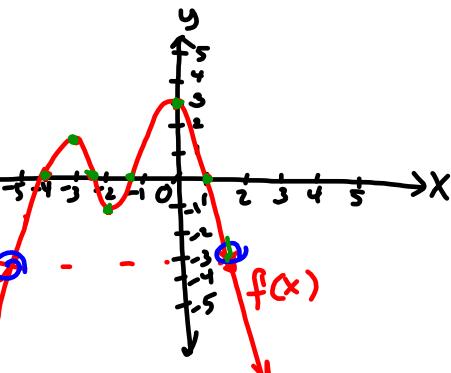
d) $f(x) = 0$ $-4, -2.5, -1.4, 1$

e.) x-intercepts
$(-4, 0)$ $(-1.4, 0)$
$(-2.5, 0)$ $(1, 0)$

f.) y-intercepts
$(0, 3)$
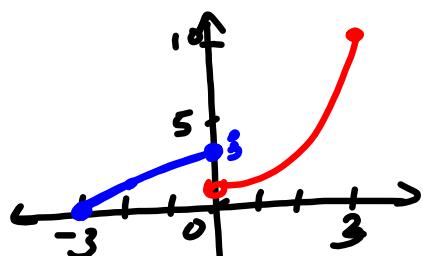
Domain $(-\infty, \infty)$
$\{x \mid x \in \mathbb{R}\}$

Range $(-\infty, 3]$
$\{y \mid y \leq 3\}$

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EX2) Sketch

$$g(x) = \begin{cases} x+3, & -3 \leq x \leq 0 \\ x^2 + 1, & 0 < x \leq 3 \end{cases}$$

Piece wise

$D: \{x \mid 3 \leq x \leq 3\}$

$R: \{y \mid 0 \leq y \leq 10\}$

a.) $g(-2) = -2 + 3$
$= \boxed{1}$

b.) $g(0) = 0 + 3$
$= \boxed{3}$

c.) $g(2) = 2^2 + 1$
$= \boxed{5}$

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2

Ex3.) Use the graph of $f(x)$ to find:

a.) Intervals function is increasing?
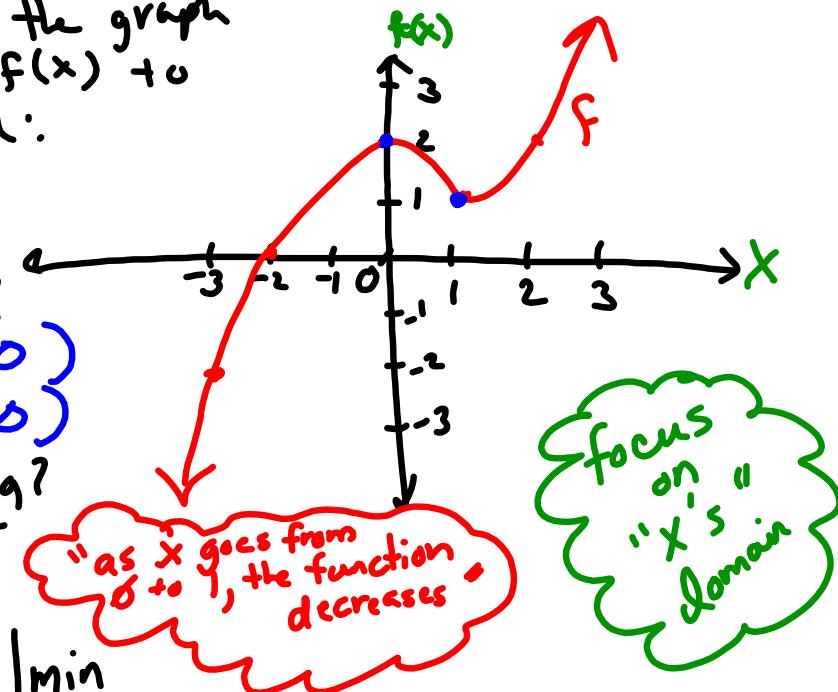
$(-\infty, 0)$
$(1, \infty)$

b.) decreasing?
$(0, 1)$

c.) Rel. max/min
$(0, 2)$ MAX
$(1, 1)$ MIN

"as x goes from 0 to 1, the function decreases

focus on "x's" domain

Jul 26-8:02 AM

Jul 26-9:37 AM