

Notes for 2.5 Graphs of Basic Functions (pp. 242 – 248)

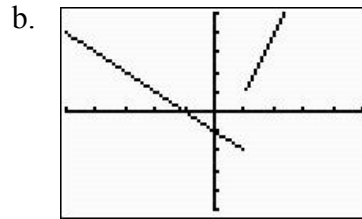
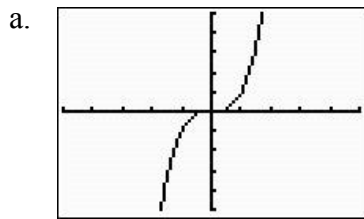
Name:
Date:
Instructor:

Topics: Continuity, Identity, Squaring, Cubing, Square Root, Cube Root, Absolute Value, Piecewise Functions

I. Continuity (p. 242)

A function is **continuous** over an interval of its domain if hand-drawn sketch graph over that interval _____.

Ex. Determine the interval of the domain over which each function is continuous.



*Use \cup (union) to hook together different statements about the domain or range (Example b)

II. Identity Function $f(x) = x$ (Chart p. 243)

Ex.

x	y



Domain:

Range:

Increasing:

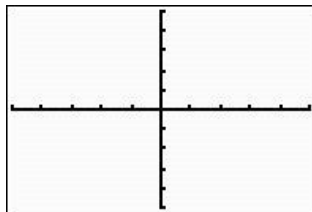
Continuous

Using a calculator- After entering the function into Y_1 , use ZOOM 6:Standard to get the calculator graph going.

III. Squaring Function $f(x) = x^2$ (Chart p. 243)

Ex.

x	y



Domain:

Range:

Decreasing:

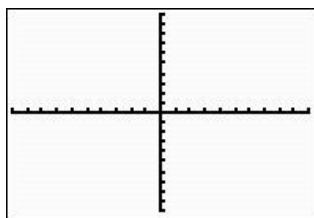
Increasing:

Continuous:

IV. Cubing Function $f(x) = x^3$ (Chart p. 244)

Ex.

x	y



Domain:

Range:

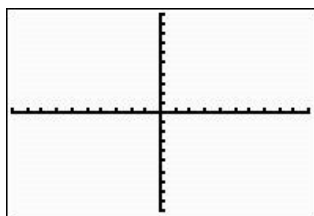
Increasing:

Continuous:

V. Square Root Function $f(x) = \sqrt{x}$ (Chart p. 244)

Ex.

x	y



Domain:

Range:

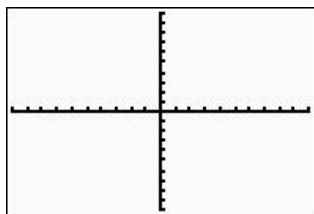
Increasing:

Continuous:

VI. Cube Root Function $f(x) = \sqrt[3]{x}$ (Chart p. 245)

Ex.

x	y



Domain:

Range:

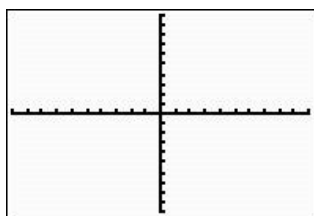
Increasing:

Continuous:

VII. Absolute Value Function $f(x) = |x|$ (Chart p. 245)

Ex.

x	y



Domain:

Range:

Decreasing:

Increasing:

Continuous:

Definition in 2 parts: $|x| = \begin{cases} x, & \text{if } x \geq 0 \\ -x, & \text{if } x < 0 \end{cases}$ (Example of a piece-wise function—a function given in parts.)

$$\text{Ex. } f(x) = \begin{cases} x+2, & \text{if } x < -4 \\ -x, & \text{if } -4 \leq x \leq 2 \\ 3x, & \text{if } x > 2 \end{cases}$$

* Substitute value into the expression where the value is part of the domain.

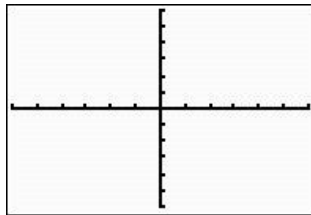
Find $f(-5)$

$f(-1)$

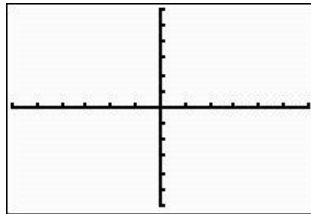
$f(0)$

$f(3)$

$$\text{Ex. } f(x) = \begin{cases} x-1, & \text{if } x \leq 3 \\ 2, & \text{if } x > 3 \end{cases}$$



$$\text{Ex. } f(x) = \begin{cases} 4-x, & \text{if } x < 2 \\ 1+2x, & \text{if } x \geq 2 \end{cases}$$



Stop tape at 26:23. Omit Greatest Integer Function.

Assignment:

pp. 249 – 252 #1 – 11, 13, 14, 17 – 25 odd, 39 – 42, 45