

Good morning Happy Monday!

Agenda:

- Collect Desmos Lab

- Warm UP

- Return Quizzes and go over

- Re-Cap last week Domain and Range

- Transformation of functions and the effect on domain and range

Warm UP:

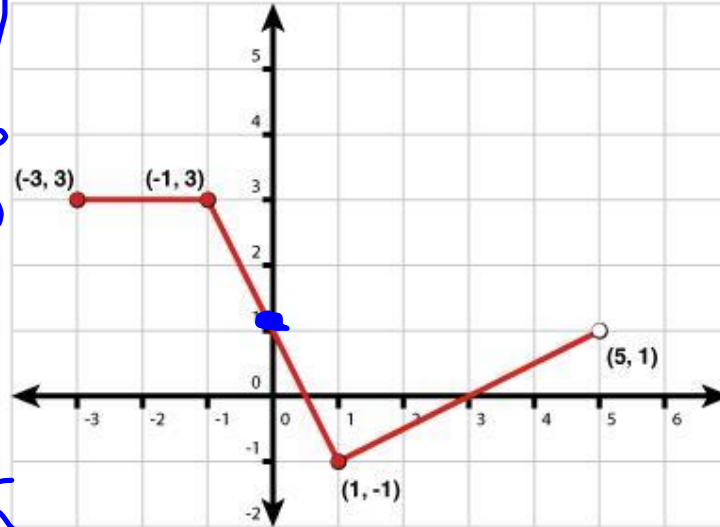
1) What is the domain and range of the graph below?

Domain: $[-3, 5)$

$\{x \mid -3 \leq x < 5\}$

Range: $[-1, 3]$
Low High

$\{y \mid -1 \leq y \leq 3\}$



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y is b/w -1 and 3, both included

2) Is the graph a function? Explain.

Yes, it passes the vertical line test

$$\frac{-6-2}{-5-3} = \frac{-8}{-8} = 1$$

$$(y - y_1) = m(x - x_1)$$

⑥
(10, 3)

$$y - 3 = 1(x - 10)$$
$$y - 3 = x - 10$$
$$y = x - 7$$

⑦
(-3, 1)

$$m = \frac{-1}{1} = -1$$
$$y - 1 = -1(x + 5)$$
$$y - 1 = -x - 5$$
$$y = -x - 4$$

⑧
a)

$$f(2) = 2(2)^2 - 4(2) + 1$$
$$2(4) - 4(2) + 1$$
$$8 - 8 + 1 = 1$$

b)

$$f(-6) = 2(-6)^2 - 4(-6) + 1$$
$$2 \cdot 36$$
$$72 - 24 + 1$$
$$72 + 24 + 1 = 97$$

c)

$$2(2a)^2 - 4(2a) + 1$$
$$2(4a^2) - 8a + 1$$
$$8a^2 - 8a + 1$$

$$g(x) = -(x)^2 + 9$$

$$\textcircled{a} \quad -(3)^2 + 9$$

$$-9 + 9$$

$$\textcircled{0}$$

$$\textcircled{b} \quad g(x-4)$$

$$-(x-4)^2 + 9$$

$$-((x-4)(x-4)) + 9$$

$$-(x^2 - 4x - 4x + 16) + 9$$

$$-(x^2 - 8x + 16) + 9$$

$$-x^2 + 8x - 16 + 9$$

$$\boxed{-x^2 + 8x - 7}$$

$$\textcircled{c} \quad -(7)^2 + 9$$

$$-49 + 9 = \textcircled{-40}$$

$$3 \neq \overline{.33}$$

$$2.3 \neq 2.\overline{33}$$

$$\frac{3}{10} \neq \frac{1}{3}$$



Translations: h is # ; x is the variable

$f(x+h)$: Left " h " units

$$x+h=0 \quad x=-h$$

$f(x-h)$: right " h " units } all x 's

$$x-h=0 \quad x=h$$

$f(x)+k$

UP k

$f(x)-k$

down k

Applies to all y coordinates

Reflections:

$-f(x)$: reflection
across x-axis
makes all y 's
the opposite.

$f(-x)$: reflection across y -axis
make all x 's opp.

Vertical Stretch and Compression

$$af(x)$$

Stretch

$$|a| > 1;$$

multiply
all
y values
by "a"

EX] $y = 3x^4$

Compression

$$af(x)$$

EX] $0.62x^2$

$$|a| < 1$$

fraction



Composite functions

Multiple transformations on the same function.

Order

- ① Reflections
- ② Stretches vs. Compressions
- ③ Translations

