

ALEGRBA RH

Essential Question: What are step functions? How are they defined, graphed and applied to real life situations?

Do Now:

Given the function below, what is the average rate of change over the interval $-1 \leq x \leq 5$?

$$f(x) = \begin{cases} 3x+1 & x < 2 \\ -6x+10 & x \geq 2 \end{cases}$$

Consider the unique piecewise function below.

$$f(x) = \begin{cases} 2 & 0 \leq x < 5 \\ 6 & 5 \leq x \leq 10 \end{cases}$$

Evaluate each:

a. $f(0)$

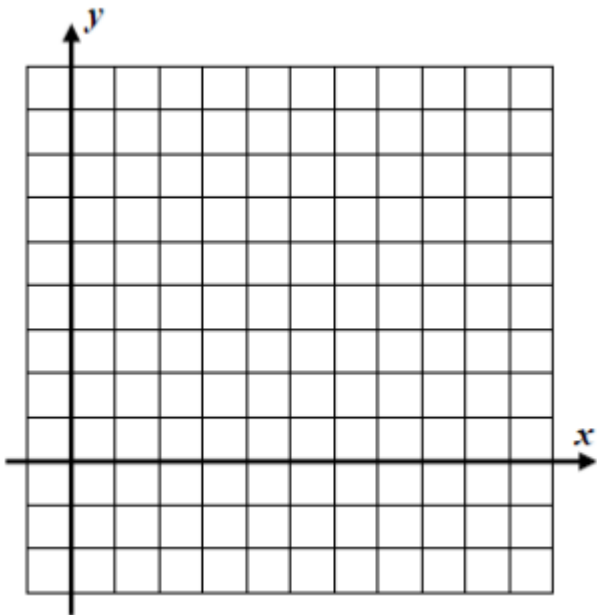
b. $f(2)$

c. $f(5)$

d. $f(7)$

e. $f(10)$

Graph the piecewise function below



A **step function** is a piecewise function containing all horizontal “pieces”. This type of function resembles a set of steps and is **discontinuous** (cannot be drawn without removing your pencil from the paper)

Practice Problem Set

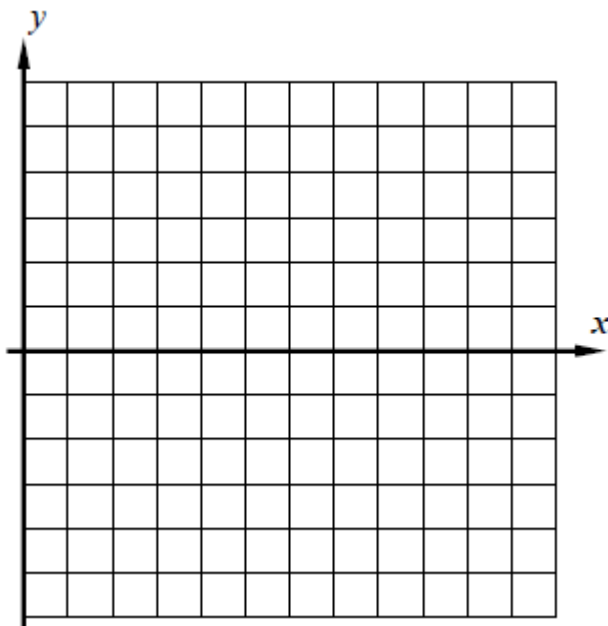
1. Given the step function below:

$$f(x) = \begin{cases} 2 & 0 \leq x < 3 \\ 5 & 3 \leq x < 5 \\ -4 & 5 \leq x \leq 10 \end{cases}$$

Evaluate each:

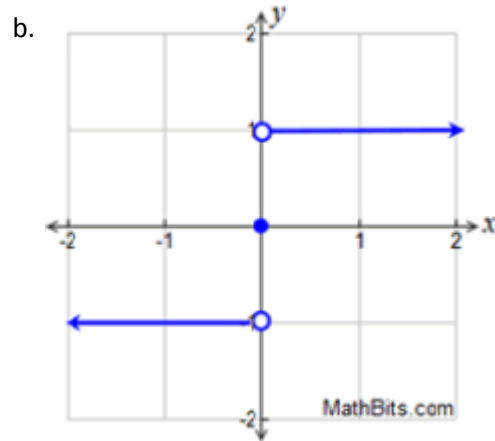
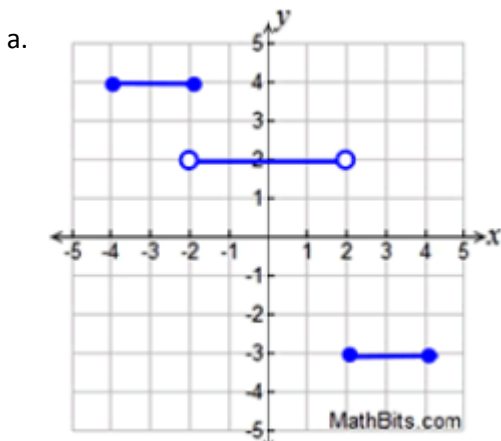
- a. $f(0)$
- b. $f(2.7)$
- c. $f(3.5)$
- d. $f(5)$

Graph the step function below.

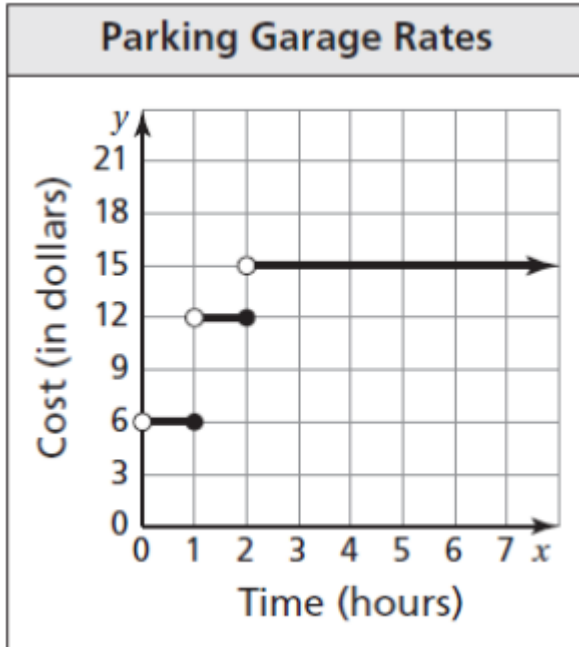


What is the domain and range of this function?

2. Define each step function shown below.



3. The graph shows the parking rates for a garage in NYC.



- How much does it cost to park for 30 minutes?
- A person checks in at 5:45 pm and checks out at 7:45. What do they owe the garage?
- If a person pays \$15 for parking, how many hours did they park for?

4. A local amusement park charges the admission fee based on age. Graph the amount of money a person would have to pay for admission based on their age.

Age Range	Price
3 and under	Free
8 and under	\$4.00
16 and under	\$8.00
17 and older	\$12.00

