

U3 Day 10 Notes: Writing & Graphing Piecewise Functions

F-IF.7b: I can graph piecewise functions.

1. One internet service provider has the following rate schedule for high speed internet service:

Write a piecewise function that represents the scenario, and then graph the solutions.

Monthly Service Charge: \$10

First 20 hours of Usage: Free

Next 20 hours of Usage: \$0.25/hour

Over 40 hours of Usage: \$1.00/hour

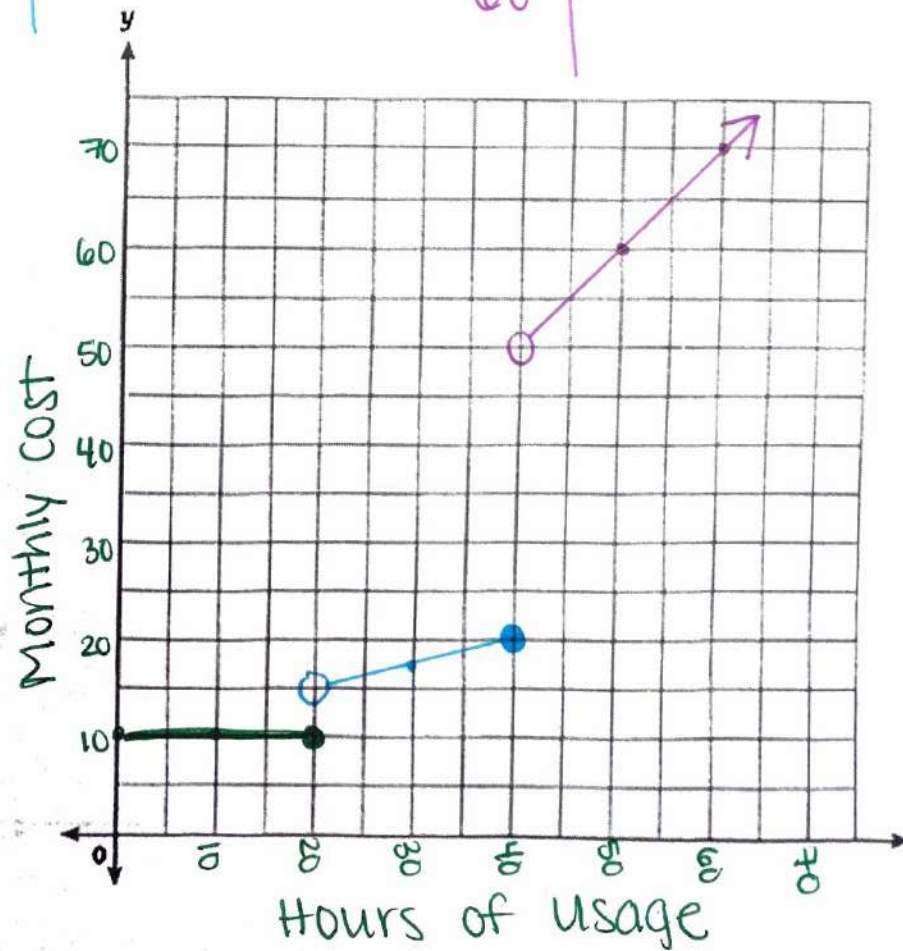
Function:

$$f(x) = \begin{cases} 10 & \text{if } x \leq 20 \\ 10 + .25x & \text{if } 20 < x \leq 40 \\ 10 + 1x & \text{if } x > 40 \end{cases}$$

x	10
20	10
10	10
0	10

x	10 + .25x
20	15
30	17.50
40	20

x	10 + x
40	50
50	60
60	70



2. The admission rates at an amusement park are as follows:
Write a piecewise function that represents the scenario, and then graph the solutions.

Children 5 years and under: free
Children 5-12 years, inclusive: \$10
Children 12-18 years, inclusive: \$25
Adults: \$35

Function:

$$f(x) = \begin{cases} 0 \\ 10 \\ 25 \\ 35 \end{cases}$$

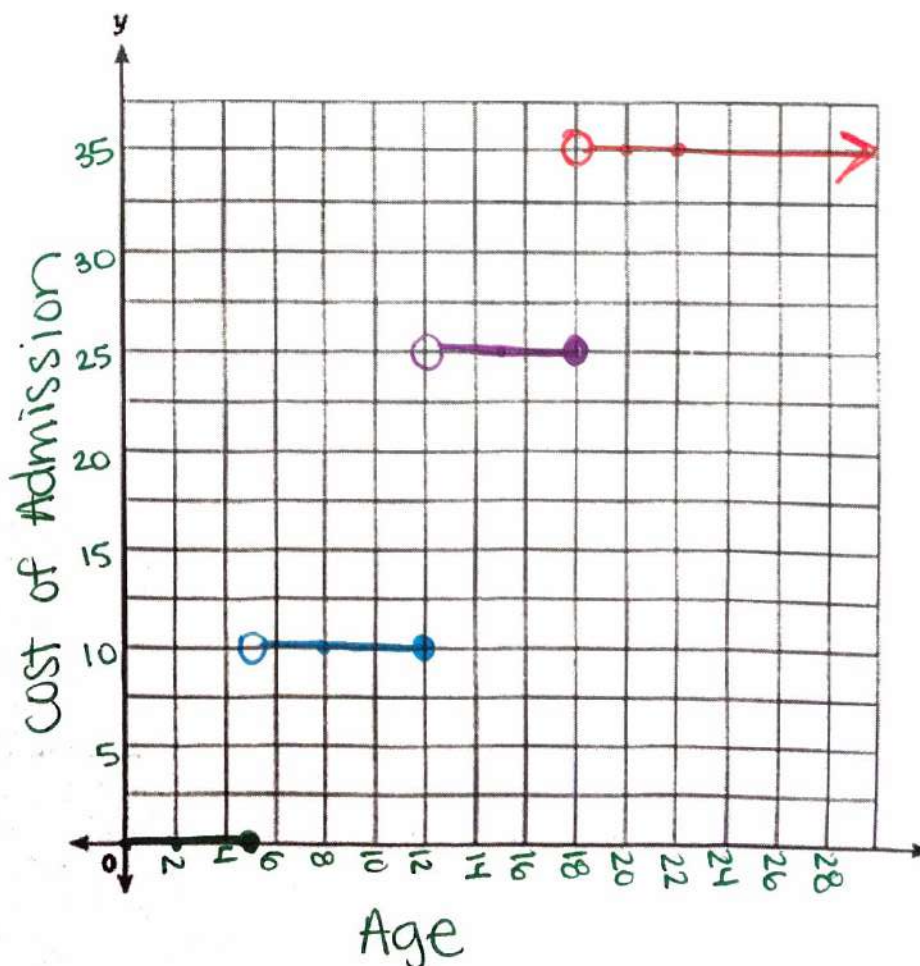
$$\begin{aligned} &\text{if } x \leq 5 \\ &\text{if } 5 < x \leq 12 \\ &\text{if } 12 < x \leq 18 \\ &\text{if } x > 18 \end{aligned}$$

x	0
5	0
2	0
0	0

x	10
5	10
8	10
12	10

x	25
12	25
15	25
18	25

x	35
18	35
20	35
22	35



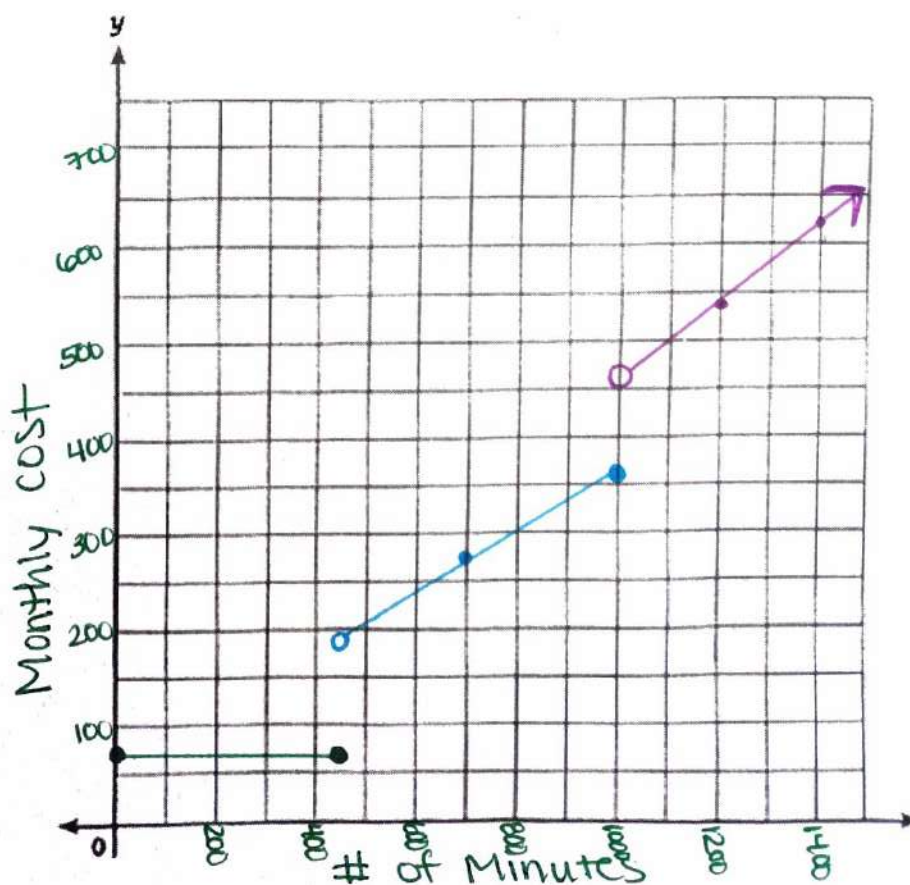
3. A cell phone billing plan costs \$60 per month, if you use 450 minutes or less. If you use between 450 and 1000 minutes, you have to pay an additional \$0.30 per minute. If you use over 1000 minutes, you have to pay an additional \$0.40 per minute. Write a piecewise function that represents the scenario, and the graph the solutions.

Function: $f(x) = \begin{cases} 60 & \text{if } x \leq 450 \\ 60 + .30x & \text{if } 450 < x \leq 1000 \\ 60 + .40x & \text{if } x > 1000 \end{cases}$

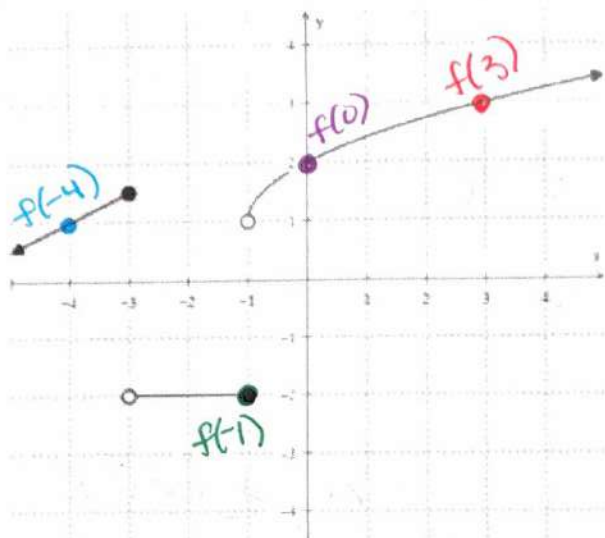
X	60
450	60
400	60
350	60
0	60

X	$60 + .30x$
450	195
700	270
1000	360

X	$60 + .40x$
1000	460
1200	540
1400	620



4. Evaluate for the following:



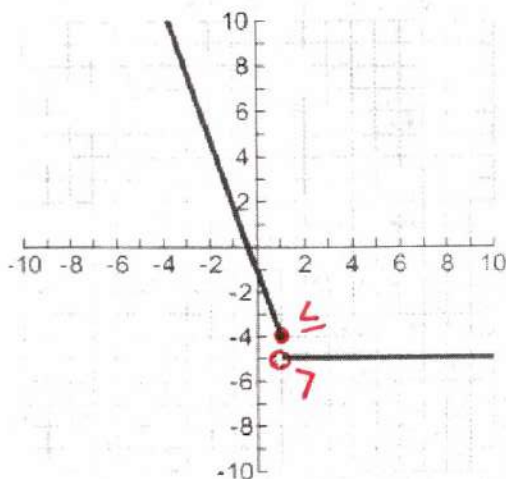
$$f(0) = 2$$

$$f(-4) = 1$$

$$f(-1) = -2$$

$$f(3) = 3$$

5. Which function represents the graph below?



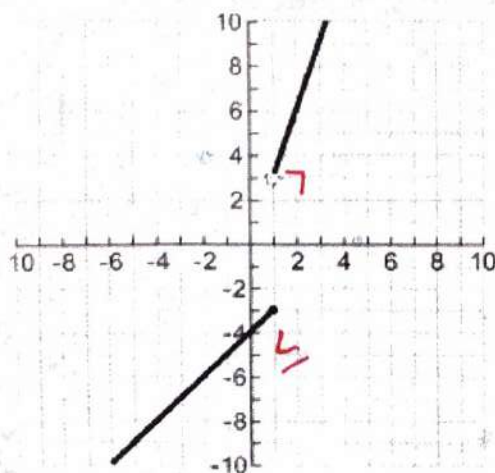
$$A. f(x) = \begin{cases} -3x, & \text{if } x < 1 \\ -5, & \text{if } x \geq 1 \end{cases}$$

$$C. f(x) = \begin{cases} -3x, & \text{if } x < 1 \\ -5, & \text{if } x > 1 \end{cases}$$

$$B. f(x) = \begin{cases} -3x, & \text{if } x \leq 1 \\ -5, & \text{if } x > 1 \end{cases}$$

$$D. f(x) = \begin{cases} -3x, & \text{if } x \leq 1 \\ -5, & \text{if } x \geq 1 \end{cases}$$

6. Which function represents the graph below?



$$A. f(x) = \begin{cases} x, & \text{if } x \geq 1 \\ 3x, & \text{if } x < 1 \end{cases}$$

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

$$B. f(x) = \begin{cases} -3x - 1, & \text{if } x < 1 \\ -5, & \text{if } x \geq 1 \end{cases}$$

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