Name _____

HW L3.3

1. Let $f(x) = \begin{cases} x^2 + 3x - 9 & x \leq -4 \\ 2x + 1 & -4 < x \leq 1 \\ -5x + 7 & x > 1 \end{cases}$

   Find $f(-8)$, $f(-4)$, $f(3)$

2. The cost, C , in dollars, of shipping a package that weighs w pounds can be modeled by the piecewise function given by

$$C(w) = \begin{cases} 11 & 0 < w < 2 \\ 9 + 1.49w & 2 \leq w < 10 \\ 6 + 1.99w & w \geq 10 \end{cases}$$

   a. How much does it cost to ship a package that weighs 1.5 pounds?

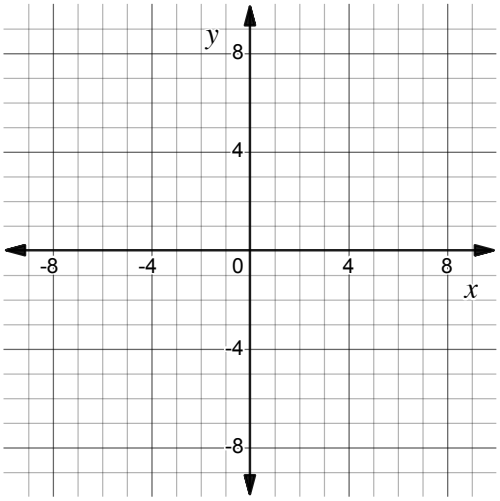
   b. How much does it cost to ship a package that weighs 5 pounds?

   c. How much more does it cost to ship a package that weighs 10 pounds than a package that weighs 9 pounds?

MATH MEDIC

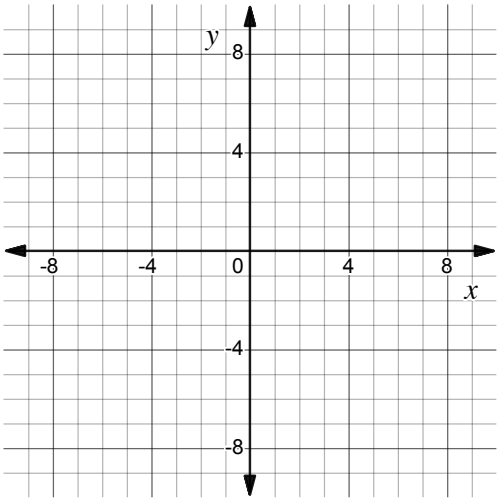
3. Graph the piecewise function given by

$$g(x) = \begin{cases} 4 & -9 \leq x \leq -5 \\ x & -5 < x \leq 2 \\ -2 & x > 2 \end{cases}$$



4. Graph the piecewise function given by

$$g(x) = \begin{cases} x + 9 & -6 \leq x < -2 \\ .5x^2 & -2 \leq x \leq 4 \\ -2x + 11 & 4 < x \leq 8 \end{cases}$$



5. Walgreens has the following pricing for 4x6 photo prints:

Quantity	Price
$1-74$	$\$0.37$ each
$75+$	$\$0.25$ each

a. Write a piecewise function for $C(p)$, that gives the cost of purchasing p prints.

b. Patty ordered 70 prints, then realized she was still short and ordered 10 more the next day. How much did this mistake cost her? Explain.

6. Let $f(x) = \begin{cases} 2+13x & x \leq -3 \\ 2x - x^2 & -3 < x \end{cases}$

The graph of f can be drawn with an open circle at $(-3, k)$. Find the value of k.

7. Santiago's weekly income (in dollars) after working h hours can be described by the function f below.

$$f(h) = \begin{cases} 13.5h & 0 < h \leq 40 \\ 20.25h - 270 & h > 40 \end{cases}$$

Which of the following conclusions is correct?

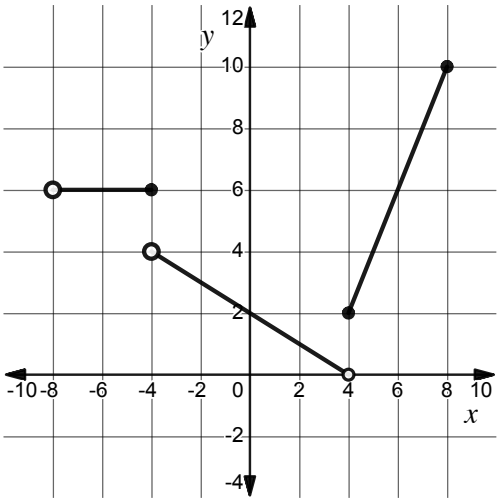
A) Santiago gets paid $\$13.50$ an hour for up to 40 hours, and an additional $\$20.35$ per hour for hours beyond 40.

B) Santiago has to pay $\$270$ in taxes if he works more than 40 hours in a week.

C) Santiago gets paid 1.5 times his hourly rate for hours he works beyond 40 hours.

D) If Santiago works 43 hours, he gets paid $\$870.75$.

8. The graph of a piecewise function f is shown in the xy-plane for $-8 < x \leq 8$. Write the equation for f.



9. Suppose a taxi company charges a fare based on the distance traveled as follows:

- For the first 2 kilometers, the fare is $\$10$.
- For the next 8 kilometers, the fare is $\$1.50$ per kilometer.
- For any distance beyond 10 kilometers, the fare is $\$1$ for each additional kilometer.

Which of the following piecewise functions correctly represents the fare, $F(x)$, charged by the taxi company for a total distance of x kilometers?

A)
$$F(x) = \begin{cases} 10 & 0 < x \leq 2 \\ 10 + 1.5(x-2) & 2 < x \leq 10 \\ 22 + (x-10) & x > 10 \end{cases}$$

B)
$$F(x) = \begin{cases} 10 & 0 < x < 2 \\ 10 + 1.5(x-2) & 2 \leq x \leq 10 \\ 22 + (x-10) & x > 10 \end{cases}$$

C)
$$F(x) = \begin{cases} 10 & 0 < x \leq 2 \\ 10 + 1.5x & 2 < x \leq 10 \\ x & x > 10 \end{cases}$$

D)
$$F(x) = \begin{cases} 10 & 0 < x \leq 2 \\ 10 + 1.5(x-2) & 2 < x \leq 10 \\ x & x > 10 \end{cases}$$

10. A phone company offers a prepaid plan for its customers. The plan charges customers $\$30$ for the first 500 minutes and $\$0.10$ per minute for any time beyond that. Which of the following piecewise functions correctly represents the cost $C(t)$ of the prepaid plan for t minutes?

A) $$C(t) = \begin{cases} 30 & 0 \leq t \leq 500 \\ 30 + 0.1t & t > 500 \end{cases}$$

B) $$C(t) = \begin{cases} 30 & 0 \leq t \leq 500 \\ 30 + 0.1(t - 500) & t > 500 \end{cases}$$

C) $$C(t) = \begin{cases} 30t & 0 \leq t \leq 500 \\ 30 + 0.1(t - 500) & t > 500 \end{cases}$$

D) $$C(t) = \begin{cases} 30t & 0 \leq t \leq 500 \\ 0.1(t - 500) & t > 500 \end{cases}$$

11. Users of a construction company's services are charged in 1 -hour increments. This means that customers are billed for a full hour when any part of an hour is used. The company charges $\$200$ for one billed hour, $\$150$ for each of the next two billed hours, and $\$100$ per hour for any additional billed hours beyond that. Which of the following piecewise functions correctly represents the cost in dollars, $C(t)$, for t billed hours of service?

A)
$$C(t) = \begin{cases} 200 & 0 < t \leq 1 \\ 200 + 150t & 1 < t \leq 3 \\ 500 + 100t & t > 3 \end{cases}$$

B)
$$C(t) = \begin{cases} 200 & 0 < t < 1 \\ 200 + 150t & 1 \leq t < 3 \\ 500 + 100t & t \geq 3 \end{cases}$$

C)
$$C(t) = \begin{cases} 200 & 0 < t < 1 \\ 200 + 150(t-1) & 1 \leq t < 3 \\ 200 + 100(t-3) & t \geq 3 \end{cases}$$

D)
$$C(t) = \begin{cases} 200 & 0 < t \leq 1 \\ 200 + 150(t-1) & 1 < t \leq 3 \\ 500 + 100(t-3) & t > 3 \end{cases}$$

12. A shipping company's charges are based on the weight of a package as follows: $\$20$ for packages weighing up to 5 pounds, $\$30$ for packages weighing more than 5 and up to 10 pounds, and $\$40$ for packages weighing more than 10 pounds. Which of the following piecewise functions correctly represents the cost $C(w)$ in dollars for shipping a package weighing w pounds?

A) $$C(w) = \begin{cases} 20w & 0 < w \leq 5 \\ 30w & 5 < w \leq 10 \\ 40w & w > 10 \end{cases}$$

B) $$C(w) = \begin{cases} 20w & 0 < w \leq 5 \\ 30w & 5 \leq w < 10 \\ 40w & w > 10 \end{cases}$$

C) $$C(w) = \begin{cases} 20 & 0 < w \leq 5 \\ 30 & 5 < w \leq 10 \\ 40 & w > 10 \end{cases}$$

D) $$C(w) = \begin{cases} 20 & 0 < w < 5 \\ 30 & 5 \leq w < 10 \\ 40 & w \geq 10 \end{cases}$$