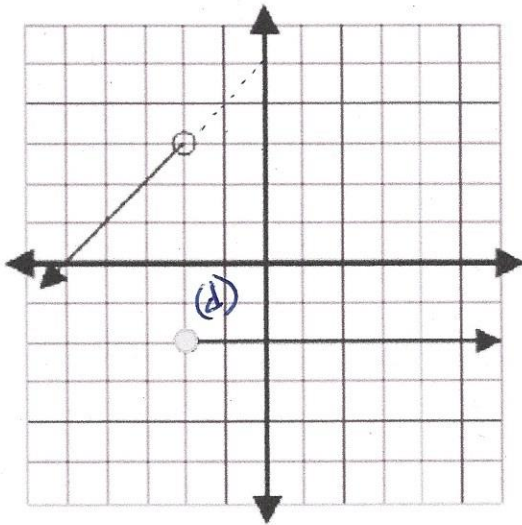


1. Given the following piecewise function  $f(x)$ :



a. State the domain:  $(-\infty, \infty)$   
 $x \in \mathbb{R}$

b. State the range:  $(-\infty, 3)$   
 $y < 3$

c. Find  $f(-15)$   
 equation  $y = x + 5$   
 $y = -15 + 5$   
 $y = -10$

d. Find  $f(-2)$   
 $-2$

e. Find  $f(5.6)$   
 $-2$

f. Is this function continuous or non-continuous?

*there is a break (gap) in the graph*

g. Define the function graphed above

$$f(x) = \begin{cases} x + 5 & ; \quad x < -2 \\ -2 & ; \quad x \geq -2 \end{cases}$$

2. Graph the following piecewise function and state the domain/range.

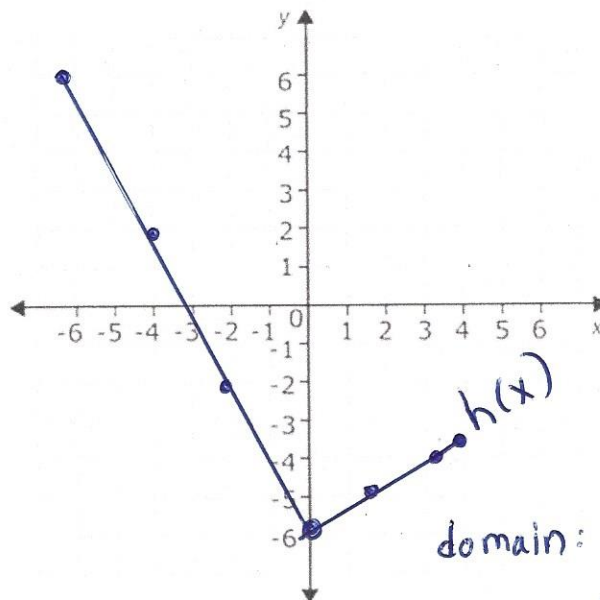
$$h(x) = \begin{cases} -2x - 6 & -6 \leq x < 0 \\ \frac{1}{2}x - 6 & 0 \leq x \leq 4 \end{cases}$$

$$y = -2x - 6$$

$$y = \frac{1}{2}x - 6$$

x	y
-6	6
-4	2
-2	-2
0	-6

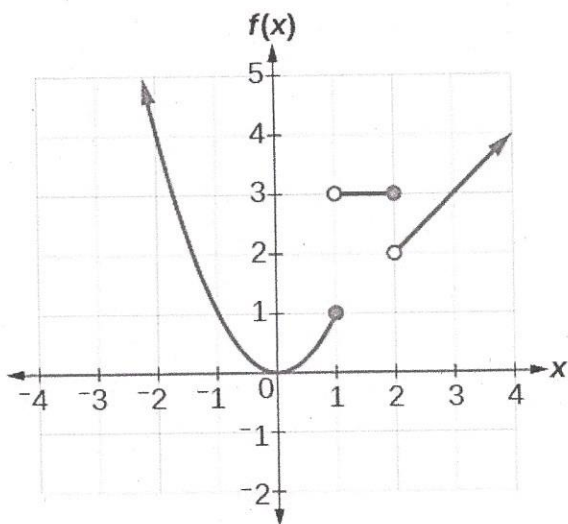
x	y
0	-6
1	-5.5
2	-5
3	-4.5
4	-4



domain:  $[-6, 4]$   
 $-6 \leq x \leq 4$

range:  $[-6, 6]$   
 $-6 \leq y \leq 6$

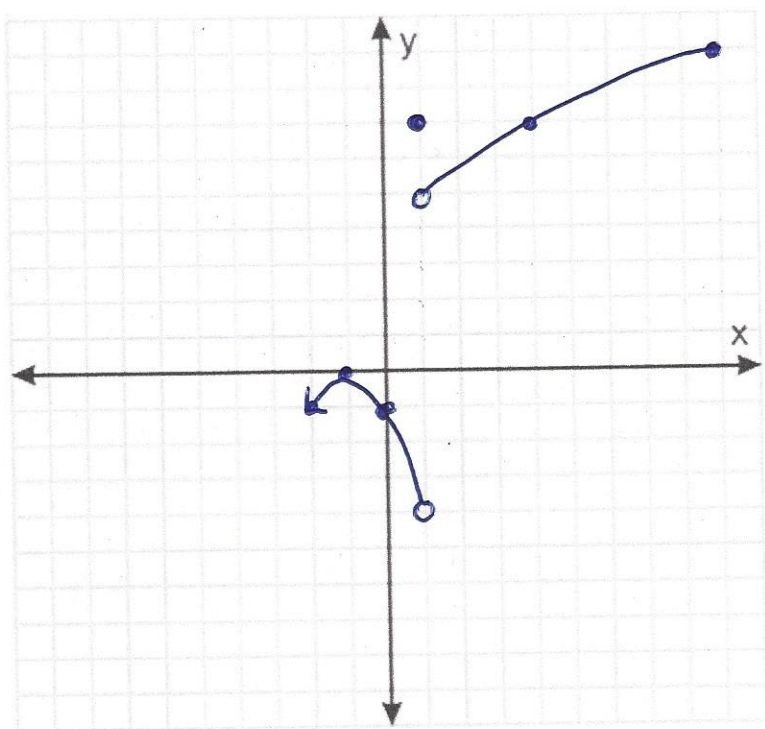
3. Define the piecewise function below.



$$f(x) = \begin{cases} x^2; & x \leq 1 \\ 3; & 1 < x \leq 2 \\ x; & x > 2 \end{cases}$$

4. Graph the piecewise function below:

$$f(x) = \begin{cases} -(x+1)^2 & x < 1 \\ 7 & x = 1 \\ 2\sqrt{x} + 3 & 1 < x \leq 9 \end{cases}$$



$$y = -(x+1)^2$$

x	y
0	-1
-1	0
-2	-1

$$y = 7$$

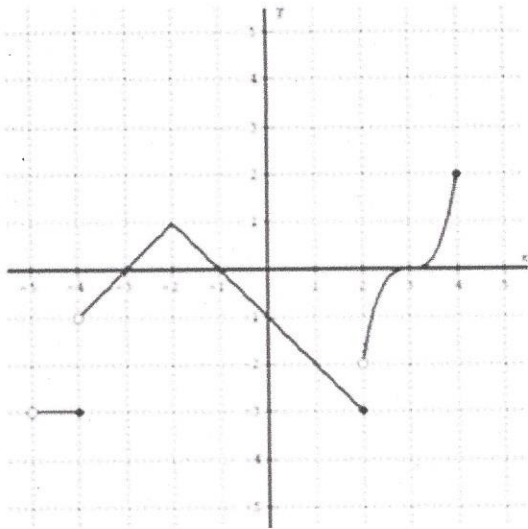
x	y
1	7

$$y = 2\sqrt{x} + 3$$

x	y
1	5
3	6.4641
4	7
7	8.2915
9	9

You could just graph the interval values and connect with a curve

5. Define the following piecewise function



$$f(x) = \begin{cases} -3; & -5 < x \leq -4 \\ -|x+2|+1; & -4 < x \leq 2 \\ 2(x-3)^3; & 2 < x \leq 4 \end{cases}$$

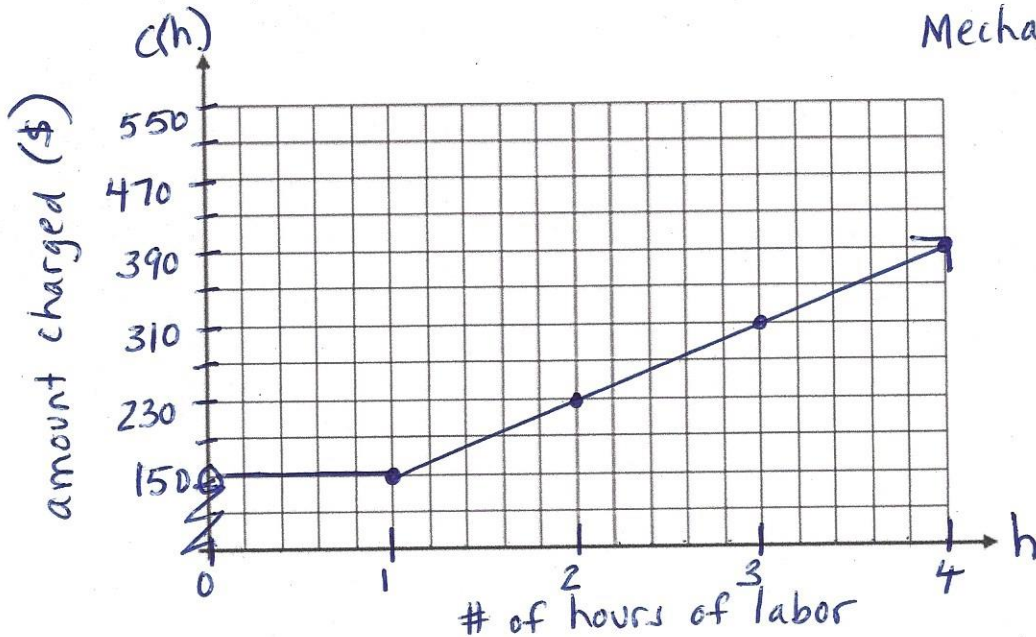
6. A mechanic charges \$150 for the first hour of labor. He then charges \$80 for each additional hour.

a. Write the piecewise function that defines the amount charged,  $C$ , based on the number of hours of labor  $h$ .

$$C(h) = \begin{cases} 150; & 0 < h \leq 1 \\ 80(h-1)+150; & h > 1 \end{cases}$$

$h$  = # of hours of labor  
 $C(h)$  = amount charged (\$)

b. Graph the piecewise function



c. How much would the mechanic charge you if he worked on your car for 3.5 hours?

(Algebraically)

$$C(3.5) = 80(3.5-1) + 150 \\ = 350$$

A bill of \$350 is for 3.5 hours of work on a car.