**Piecewise Functions** Name: _____

**Part I**. Short Answer

1. The following function

$$C(q):\begin{cases}=3q+55,\ 0\le q<500\\ =2q+500,\ 500\le q\le 2000\end{cases}$$

describes the cost, *C(q)*, in dollars, of purchasing a quantity, *q*, of t-shirts from a manufacturer.

a) What would it cost to purchase 100 t-shirts?

b) What would it cost to purchase 499 t-shirts?

c) What would it cost to purchase 500 t-shirts?

d) Would it be cheaper to place two orders of 400 t-shirts or one order of 800 t-shirts? How much cheaper?

2. The following function

$$C(n):\begin{cases} = 0.28, \ n \in ]0,40[ \\ = 0.22, \ n \in [40,100[ \\ = 0.15, \ n \in [100,\infty[ \end{cases}$$

describes the cost **per** photo, *C(n)* , in dollars, of printing *n* digital pictures at Uniprix.

a) What would it cost to print 10 pictures?

b) What would it cost to print 39 pictures?

c) What would it cost to print 40 pictures?

d) What would it cost to print 100 pictures?

e) Would it be cheaper to print 2 sets of 50 pictures or one set of 100 pictures?

Explain why.

**Part II**. Graphing.

Carefully graph each of the following. Identify whether or not the graph is a function. Then, evaluate the graph at any specified domain value.

1.

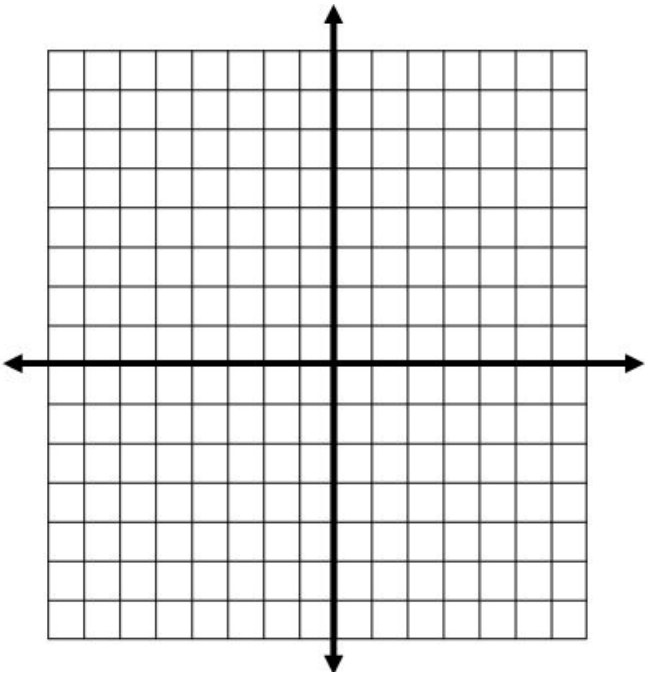
$$f(x)=\begin{cases} x+5 & x<-2 \\ -2x-1 & x\geq -2 \end{cases}$$

Function? Yes or No

$f(3)=$

$f(-4)=$

$f(-2)=$



2.

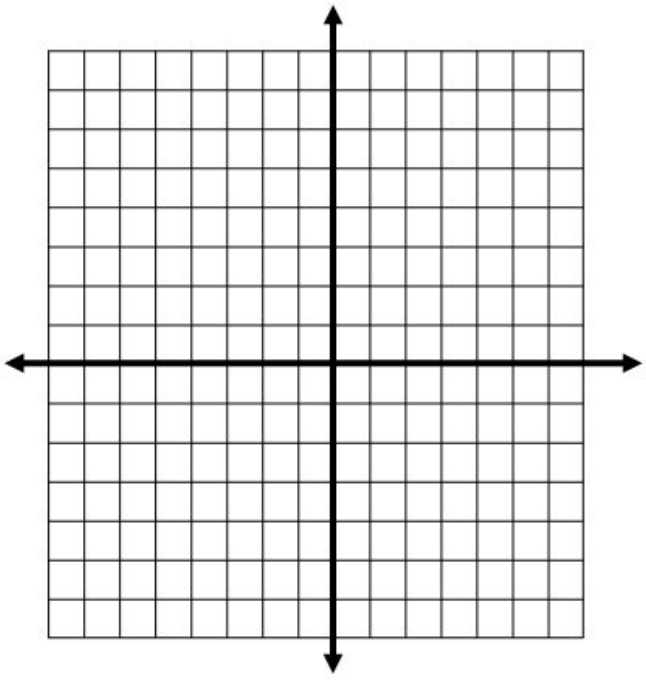
$$f(x)=\begin{cases} 2x+1 & x\geq 1 \\ \frac{x}{2}-3 & x<1 \end{cases}$$

Function? Yes or No

$f(-2)=$

$f(6)=$

$f(1)=$



3.

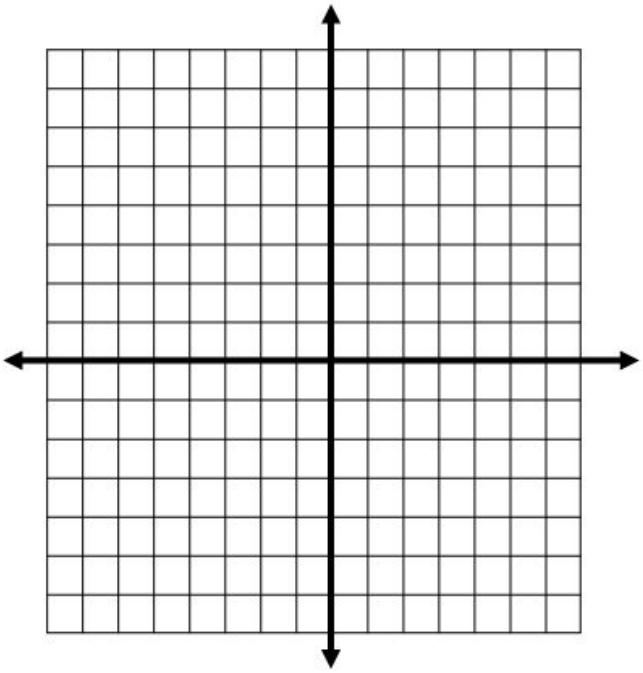
$$f(x)=\begin{cases}4x-2 & x\geq 2\\ -\frac{x}{3}+4 & x<2\end{cases}$$

Function? Yes or No

$f(-4)=$

$f(8)=$

$f(2)=$



4.

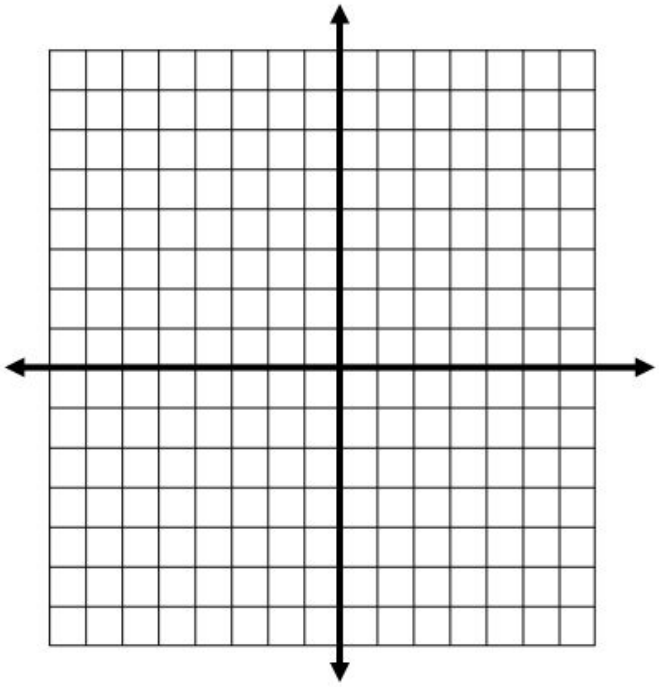
$$\begin{cases}-x+4 & x\leq 0\\ \frac{2x}{3}-1 & 0<x\leq 5\\ 2 & x>5\end{cases}$$

Function? Yes or No

$f(-2)=$

$f(0)=$

$f(5)=$



**Part III**. **Long Answer Questions**

1.

The following is a graph of a cyclist's trip.
The first part is quadratic, the second is constant and the third part is linear.


How far from home was the cyclist:

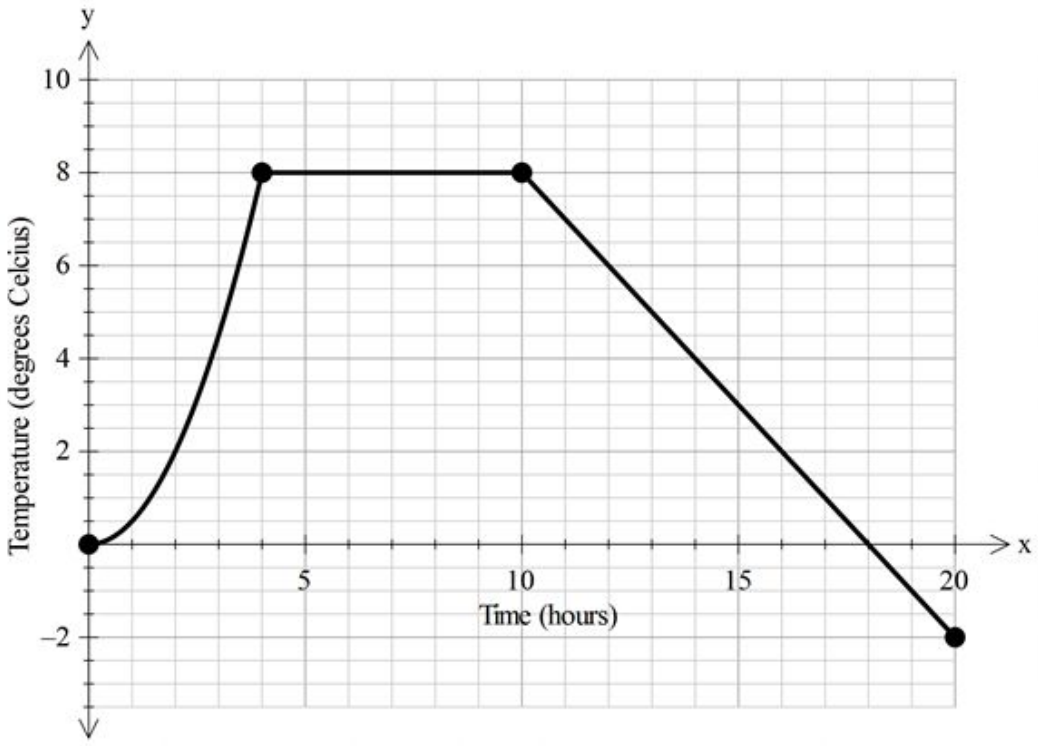
a) after 2.5 hours?

b) after 12.5 hours?

c) after 17.5 hours?

d) For how long was the cyclist more than 8 km from the starting point?

2. The following is a graph of the temperature of a substance during an experiment. The first part is quadratic, the second is constant and the third part is linear.




What was the temperature:

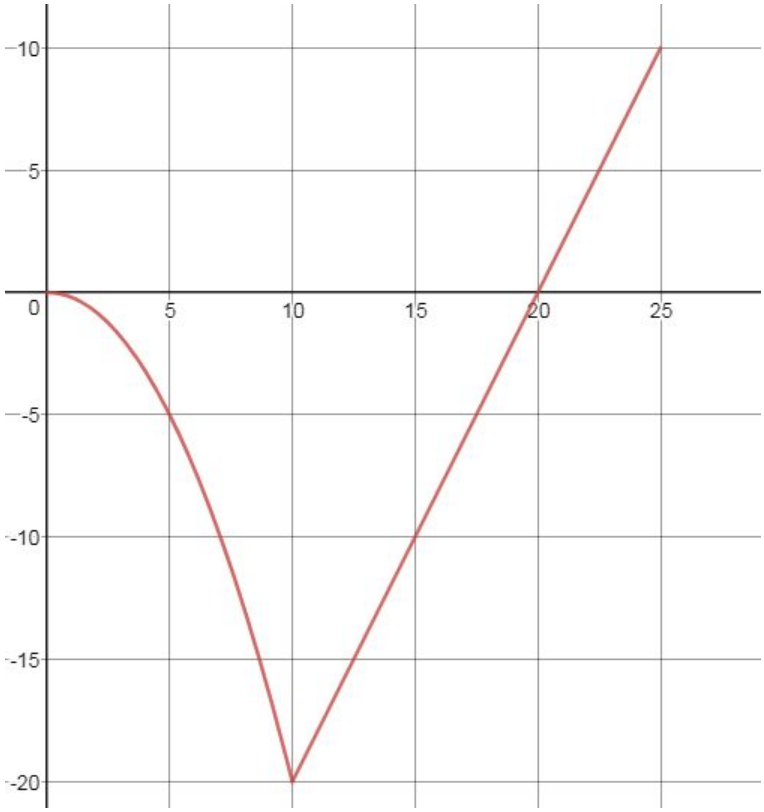
a) after 2.5 hours?

b) after 7.5 hours?

c) after 17.5 hours?

d) For how long was the temperature below 2 degrees Celcius?

3. The following is a graph of the outdoor temperature (in degrees Celcius) over a 25 hour period.




For how long was the temperature ABOVE -12 degrees Celcius?

4. The following graph indicates the distance (in kilometers) that a cyclist is from home over a 17 hour time interval.