5.3 Piecewise Function:
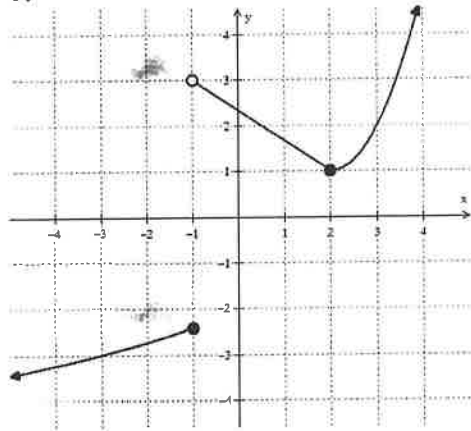
Notes:
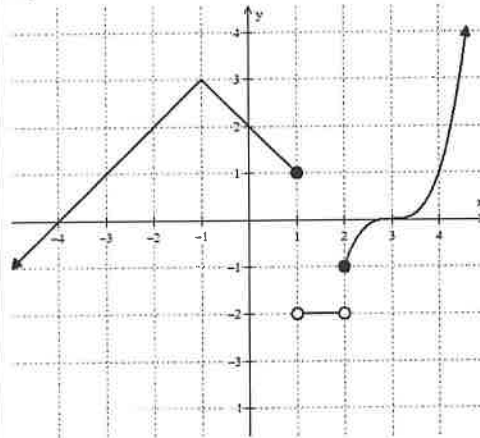
8.

a. $f(3) =$

b. $f(-1)^* =$

c. $f(-3) =$

d. $f(2) =$

e. $f(0.5)^* =$

* you might have to estimate!
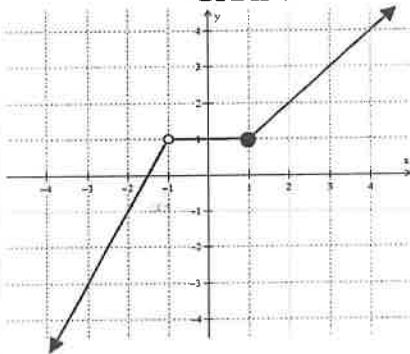
9.

a. $f(-4) =$

b. $f(1) =$
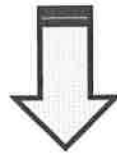
c. $f(3) =$

d. $f(2) =$

e. $f(1.5) =$

---

10. Writing Equations From Graphs Use the picture of the piecewise function to answer the following.

GRAPH	Write the equation for each of the 3 pieces	Domain for each piece

Now write the piecewise function Using the information above!!

$$f(x) = \begin{cases} \underline{\hspace{3cm}} & \underline{\hspace{3cm}} \\ \underline{\hspace{3cm}} & \underline{\hspace{3cm}} \\ \underline{\hspace{3cm}} & \underline{\hspace{3cm}} \end{cases}$$

---

11. Solve the following system:

$2x - 4y = 38$
$23 - 2y = x$

12. Solve for y:

$-x - 4y = 0$

13. Find the initial value and percent decrease for the following model:

$$y = 42(.73)^x$$

I.V._____ % Dec_____

---

14. Multiply: $(9x - 1)^2$

15. Solve for x:

$$\frac{2x - 1}{3} - 13 = 0$$

16. Find the best fit LINEAR regression equation for the following:

x	-30	-10	-50	40	70	160	110	100
y	-8.5	-6.5	-8.5	-4	-3.5	-1	-1.5	-2

Piecewise Functions

Use the piecewise function to evaluate the following.

1.

$$f(x) = \begin{cases} -2x^2 - 1, & x \leq 2 \\ \dfrac{4}{5}x - 4, & x > 2 \end{cases}$$
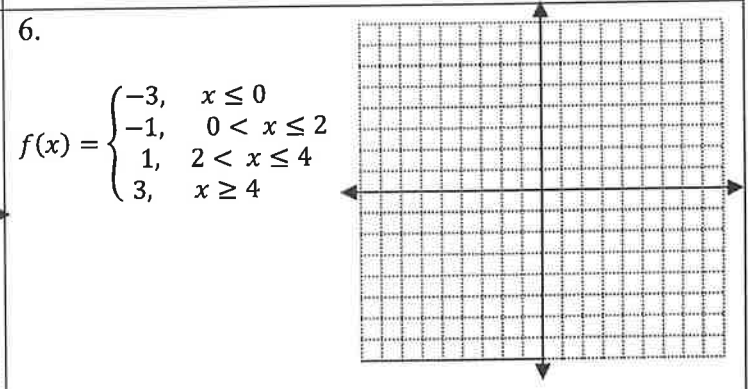
a. $f(0) =$ b. $f(5) =$
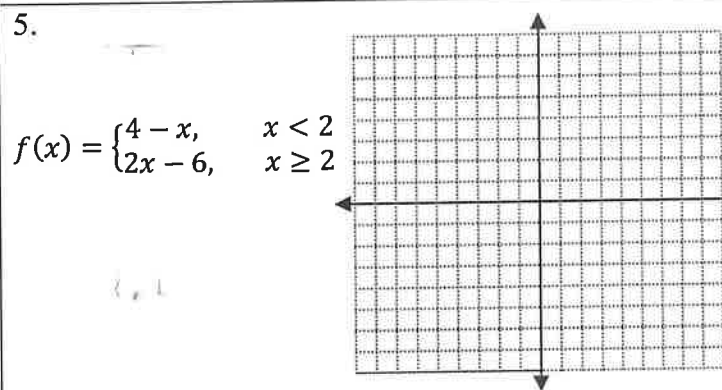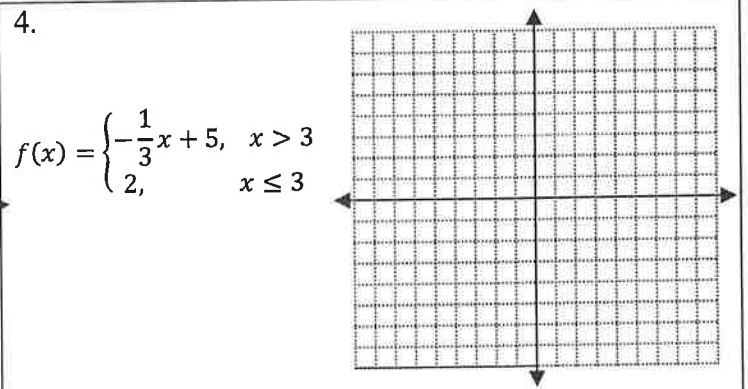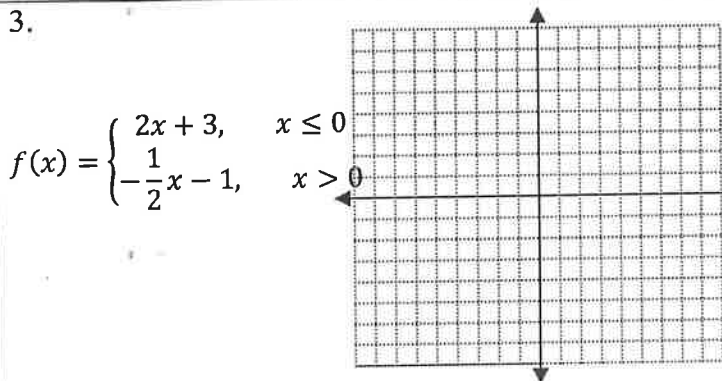
c. $f(2) =$ d. $f(-3) =$

2.

$$f(x) = \begin{cases} x^3 - 7x, & x \leq -3 \\ 8, & -3 < x \leq 3 \\ 77, & x > 3 \end{cases}$$

a. $f(-5) =$ b. $f(11) =$

c. $f(0) =$ d. $f(3) =$

Graph the following piecewise functions.

3.

$$f(x) = \begin{cases} 2x + 3, & x \leq 0 \\ -\dfrac{1}{2}x - 1, & x > 0 \end{cases}$$

4.

$$f(x) = \begin{cases} -\dfrac{1}{3}x + 5, & x > 3 \\ 2, & x \leq 3 \end{cases}$$

5.

$$f(x) = \begin{cases} 4 - x, & x < 2 \\ 2x - 6, & x \geq 2 \end{cases}$$

6.

$$f(x) = \begin{cases} -3, & x \leq 0 \\ -1, & 0 < x \leq 2 \\ 1, & 2 < x \leq 4 \\ 3, & x \geq 4 \end{cases}$$

7. Explain why you think the piecewise function in number 6 is frequently called a "step-function".

SMP #3

Piecewise Functions

1. Use the piecewise function to evaluate the following.

$$f(x) = \begin{cases} -x, & x < -3 \\ 2x^2 - 3x, & -3 < x \le 6 \\ 8, & x > 6 \end{cases}$$
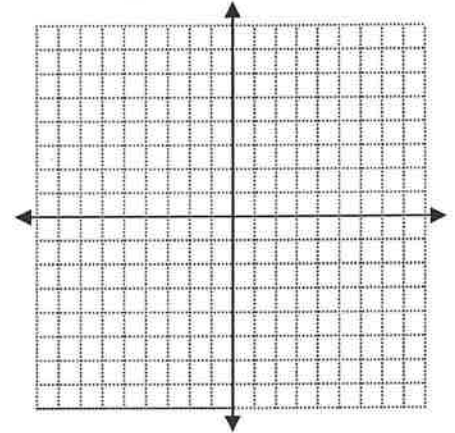
a. $f(-1) =$

b. $f(-4) =$

c. $f(9) =$

d. $f(6) =$

2. Graph the following piecewise function.

$$f(x) = \begin{cases} -\dfrac{1}{3}x - 2, & x \le 3 \\ \dfrac{1}{2}x + 1, & x > 3 \end{cases}$$

8.3 Exit Ticket

GRAPHICALLY Sully's blood pressure changes throughout the school day. Sketch a graph of his blood pressure over time. LABEL THE GRAPH! Let x stand for the time since 0800, so 1000 would be x = 2, 1200 would be x = 4, etc...

Sully's Day

- Sully's blood pressure starts at 90 and rises 5 points every hour for the first 4 hours.

- Sully chills out for lunch from 12-1 and maintains a cool 110 blood pressure.

- Last period of the day hits from 1-3 and Sully's blood pressure rises from 110 at 10 points per hour.

- School ends and Sully's blood pressure starts dropping 2 points per hour until his 8 o'clock bedtime.
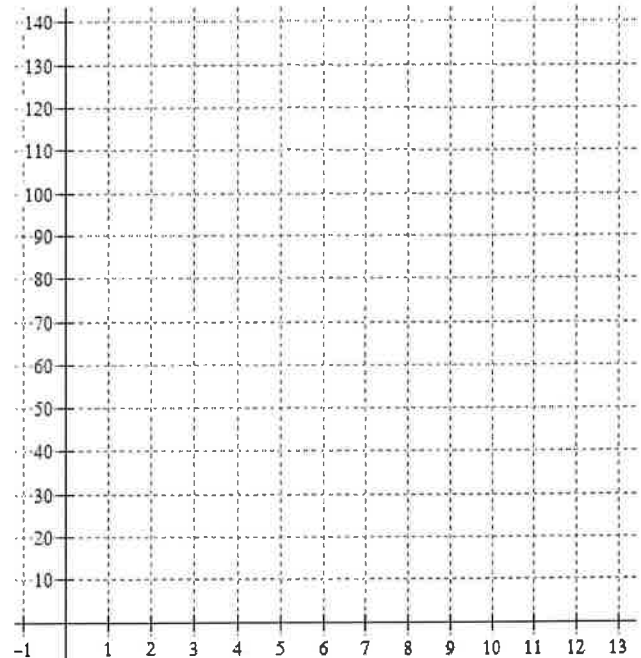
FYI: For lesson 8.4 you will need a GRAPHING CALCULATOR!