

Function Notation & Evaluating Functions

<https://www.mathbootcamps.com/function-notation-and-evaluating-functions/>



<https://www.youtube.com/watch?v=Kf3Aqov52TY>



Solving Multistep Equations

<https://www.youtube.com/watch?v=9h6LDMMNUTnA>



<https://www.youtube.com/watch?v=Kf6Z-lxvug>



Relations, Functions, Domain & Range

<https://www.youtube.com/watch?v=JDYROLE-79o>



<https://www.mathwarehouse.com/algebra/relation/math-function.php>



Graphing Linear Equations

<https://www.youtube.com/watch?v=noISLj9KYvQ>



<https://www.youtube.com/watch?v=-jXcp1xPb14>



Schade

$$(2, 3)$$
$$3 = \frac{1}{3}(2) + b$$
$$3 - \frac{2}{3}$$

Function Notation Practices
Math 1

Name: _____ Date: _____ Per: _____

1. Evaluate the following expressions given the functions below:

$f(x) = -3x + 1$

$f(x) = x^2 + 7$

$h(x) = \frac{12}{x}$

$j(x) = 2x + 9$

a. $g(10) = -29$

b. $f(3) = 16$

c. $h(-2) = -6$

d. $j(a) = 2a + 9$

e. Find x if $g(x) = 16$

f. Find x if $j(x) = 23$

7

2. Combine the following functions and evaluate when necessary.

$f(x) = 6x + 8$

$g(x) = 5x - 12$

$h(x) = 2x$

$j(x) = 3x^2 + 7x - 1$

a. Find $g(x) + f(x)$

$11x - 4$

b. Find $g(x) - f(x)$

$-x - 20$

c. Find $f(x) + h(x)$

$8x + 8$

d. Find $g(x) \cdot h(x)$

$10x^2 - 24x$

e. Find $(h - g)(4)$

0

f. Find $\frac{f(2)}{h(7)}$

$10/7$

g. Find $(f \cdot j)(2)$

45

h. Find $f(2) \cdot j(-2)$

-60

3. Translate the following statements into coordinate points. Then plot them.

a. $f(-1) = 1$

b. $f(2) = 7$

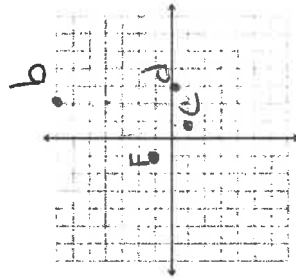
c. $f(1) = -1$

d. $f(3) = 0$

e. Is $f(x)$ a function? How do you know?

yes

no elements in the domain =



4. Given this graph of the function $f(x)$:

Find:

a. $f(-4) = 2$

b. $f(0) = 1$

c. $f(2) = -2$

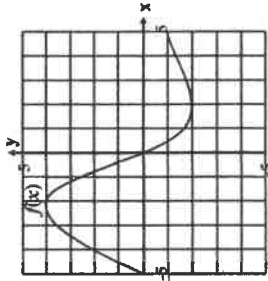
d. $f(-5) = 0$

e. x when $f(x) = -2$

f. x when $f(x) = 0$

g. Is $f(x)$ a function? How do you know?

yes - passes vertical line test



5. Given the table below, answer the following questions:

a. If $x = 1$, find $f(x)$

5

b. If the domain is 1, what is the range?

5

c. If $f(x) = 11$, what is the value for x ?

4

d. If the range is 11, what is the domain?

4

e. What is the value for $f(3)$?

9

f. What $f(x) = -1$, what is the value for x ?

-2

g. Is $f(x)$ a function? How do you know?

yes x never repeats

APPLICATION

6. Swine flu is attacking Porkopolis. The function below determines how many people have swine where t = time in days and S = the number of people in thousands. Graph the function.

$S(t) = 9t - 4$

a. Find $S(4)$.

32

b. What does $S(4)$ mean?

4 days 32 people infected

c. Find t when $S(t) = 23$.

$t = 3$

d. What does $S(t) = 23$ mean?

at 3 days 23 infected

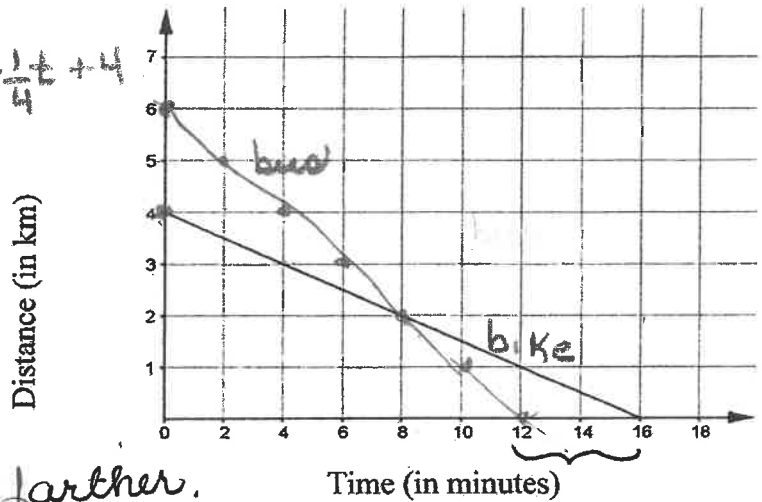
Homework Day 1

Distance From School When Riding His Bike

The **graph** models Jeremy's distance (in kilometers) from school (along the bike route) after t minutes on his bike.

$$d = -\frac{1}{4}t + 4$$

The **equation** $d = -\frac{1}{2}t + 6$ models Jeremy's distance (in kilometers) from school (along the bus route) after t minutes on the bus.



1. Which mode of transportation travels farther to get to school? Explain how you determined this.

*The bus goes farther.
On his bike rides 4 km
On bus rides 6 km*

2. Which mode of transportation takes less time to get Jeremy to school? Show your work and justify your answer.

$$d = -\frac{1}{2}t + 6$$

*The bus takes less time (12 minutes)
On his bike takes 16 minutes*

This question was taken from: Mathematics Formative Assessment System
Florida Center for Research in Science, Technology, Engineering, and Mathematics
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3. The amount of money raised at a charity fundraiser is directly proportional to the number of attendees. The amount of money raised for five attendees was \$100. How much money will be raised for 62 attendees?

\$1240

4. Multiple choice: Which of the following relations is a function?

- A (20, -2), (5, -1), (5, 1), (20, 2)
 B (-2, 20), (-1, 5), (1, 5), (2, 20)
 C (-6, -8), (6, -8), (-6, 8), (6, 8)
 D (19, -9), (36, 8), (19, 9), (0, 10)

5. Given $f(x) = -x^2 + 3x - 11$ and $g(x) = 7x + 9$. Find each of the following.

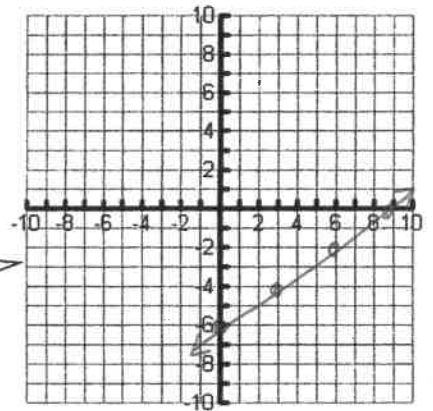
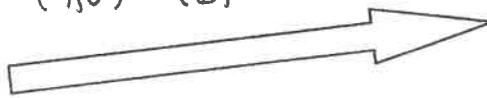
$f(-2)$	-21	$f(2)$	-9	$g(11)$	86
$g(-3a)$	$-21a + 9$	$f(5a)$	$-25a^2 + 15a - 11$	$g(s-t)$	$7s - 7t + 9$

6. Given $2x - 3y = 18$.

a) Put the equation into slope intercept form. $y = \frac{2x}{3} - 6$

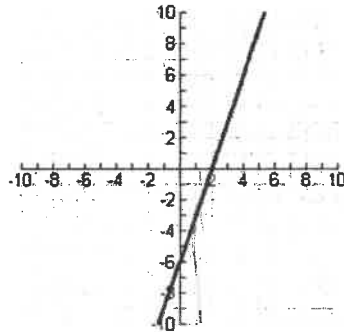
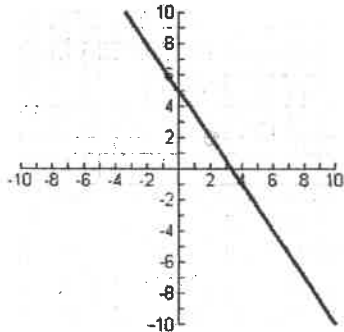
b) Identify the x and y intercepts. $\frac{x}{(9,0)}$ $\frac{y}{(0,-6)}$

c) Graph the line.



7. Write an equation for each the lines graphed below.

$y = -x + 5$



$y = 2x - 6$

8. Write an inequality to describe the domain for each graph and write an inequality to describe the range.

<p>$(-\infty, -1] \cup [1, \infty)$</p>	<p>$[-4, 4)$</p>	<p>$(-\infty, 3]$</p>
<p>Domain: $x \leq -1$ or $x \geq 1$</p> <p>Range: $y \leq 2$</p>	<p>Domain: $-4 \leq x < 4$</p> <p>Range: $-2 \leq y < 2$</p> <p>$[-2, 2)$</p>	<p>Domain: $x \leq 3$</p> <p>Range: $y \geq 2$</p> <p>$[2, \infty)$</p>

Be sure that you have:

Gotten the course syllabus signed by a parent/guardian

Absolute Value Equations

Name: _____

Solve the absolute value equations. Use the answer pieces provided and match them with the problems (record the letter of the answer next to the problem). The remaining pieces form a word associated with absolute value.

Do #3, #5, #6, #14, #15, #16 on the calculator. ALL others BY Hand!! Be sure to show all work!

1. $ 2x+1 =13$ $x=6, -7$	2. $ 5x+1 +6=2$ \emptyset
3. $ 3x+2 =4x+5$ $x=-3, -1$	4. $5 -2+x =30$ $x=8, -4$
5. $ x-2 +3=2x$ $x=1$, $5/3$	6. $ 2x+1 -x-5=0$ $x=4$, -2
7. $ x-2 =0$ $x=2$	8. $\frac{ x }{6}=3$ $x=\pm 18$
9. $4 x+3 =32$ $x=5, -11$	10. $-3 x+2 =-21$ $x=5, -9$
11. $ 5x-6 -10=-3$ $x=13/5, -1/5$	12. $ x-2 -8=10$ $x=20, -16$
13. $12-5 x-1 =7$ $x=2, 0$	14. $ 2x+12 =-3+7x$ $x=3$, -1
15. $ x-10 -x^2+10x=0$ $x=10, 1, -1$	16. $ x^2+x-9 =3$ $x=-4, 3, -3, 2$

Unscramble the pieces to find a word associated with absolute value: _____

Name: _____ Class Period: _____ Date: _____

Who said, "A cat has absolute emotional honesty: human beings, for one reason or another, may hide their feelings, but a cat does not."?



Solve and graph each inequality. You may need to show your work on a separate sheet of paper. Find the graph of the solution OR the solution in the box. Write the letter of the graph or solution in the spot for the number below.

1. $|x + 7| \leq 3$ **S**
 $-10 \leq x \leq -4$

6. $|4x - 6| < 18$ **W**
 $-6 < x < 3$

11. $|3x + 8| - 4 < x$
 $-3 < x < -2$ **N**

2. $|x - 6| \geq 12$ **I**
 $x \leq -6$ or $x \geq 18$

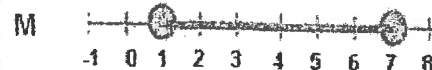
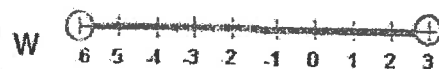
7. $|5x - 20| \leq 15$ **M**
 $1 \leq x \leq 7$

12. $|2x + 15| - 10 > x + 8$ **E**
 $x < -11$ or $x > 3$

3. $|7x - 14| < 28$ **A**
 $-2 < x < 6$

8. $|2x + 3| - 5 \geq 12$ **G**
 $x \leq -10$ or $x \geq 7$

Graphs and Solutions



Y $-18 < x < 6$

N $-3 < x < -2$

S $-10 \leq x \leq -4$

A $-2 < x < 6$

T NS



I $x \leq -6$ or $x \geq 18$

H $x \leq -10$ or $x \geq 1$

G $x \leq -10$ or $x \geq 7$

E $x < -11$ or $x > 3$

4. $|3x + 12| > 6$ **R**
 $x < -6$ or $x > -2$

9. $|3x + 6| - 15 \leq -30$ **T**
 \emptyset

5. $|2x + 9| \geq 11$ **H**
 $x \leq -10$ or $x \geq 1$

10. $|1\frac{1}{3}x + 2| - 3 < 1$ **Y**
 $-18 < x < 6$

12 4 11 12 1 9 5 12 7 2 11 8 6 3 10

For help with this worksheet, go to www.mathops.com Section 12 Lesson 4.

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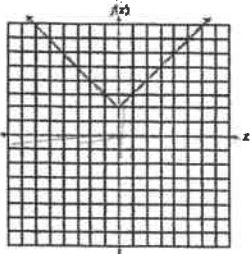
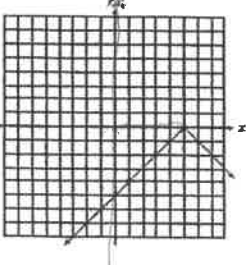
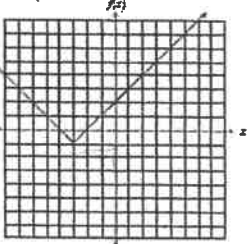
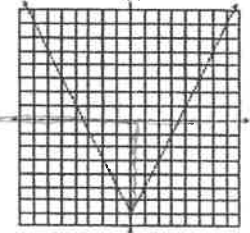
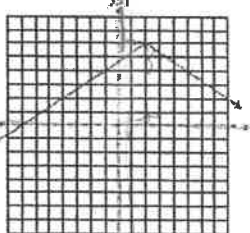
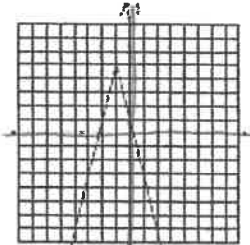
AMV

Absolute Value Equation and Inequalities Color by Number Activity**Directions:** Solve each equation or inequality. Color the sections of the picture according to your answers.

1. $ 3y - 2 = 10$ $y = 4, -\frac{8}{3}$	2. $ -5x - 1 = 4$ $x = -1, \frac{3}{5}$
3. $2 8w - 2 - 7 = 11$ $w = \frac{11}{8}, -\frac{7}{8}$	4. $ 3x + 1 = 2x - 4$ $x = \frac{3}{5}, x = -5$
5. $ 4x = 20$ $x = \pm 5$	6. $ 2x + 10 = 24$ $x = 7, -17$
7. $ 3x + 7 = 5x$ $x = \frac{7}{2}, -\frac{7}{8}$	8. $ 5x - 4 - 8 = 16$ $x = \frac{28}{5}, -4$
9. $ 2x + 4 < 12$ $-8 < x < 4$	10. $ 7x - 5 \geq 37$ $x \leq -\frac{32}{7}$ or $x \geq 6$
11. $9 2x - 5 - 7 > 11$ $x < \frac{3}{2}$ or $x > \frac{7}{2}$	12. $ 5x - 10 < 15$ $-5 < x < 5$
13. $ 3x - 6 \leq 36$ $-10 \leq x \leq 14$	14. $ 6x + 3 \geq 0$ \mathbb{R} $x \geq -\frac{1}{2}$ or $x \leq -\frac{1}{2}$
15. $3 5x + 3 \geq 21$ $x \leq -2$ or $x \geq \frac{4}{5}$	16. $8 x - 9 + 2 < 18$ $-7 < x < 11$

Practice with Graphs of Absolute Value Functions

For each graph: Write the equation of the absolute value, state the transformations from the parent function $y = |x|$, state the domain, range, and increasing & decreasing intervals.

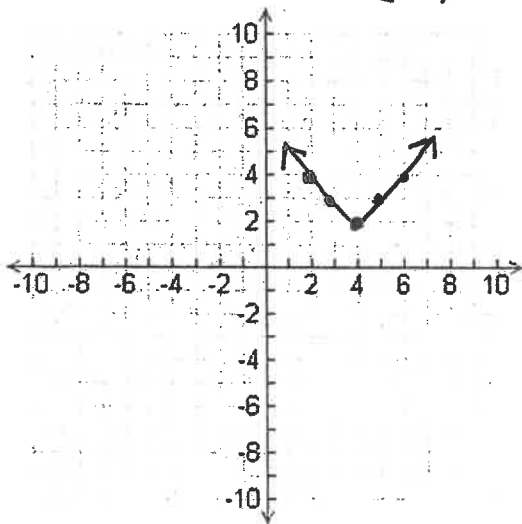
<p>1</p> 	<p>Equation: $y = x + 2$</p> <p>Transformations: up 2</p>	<p>Domain: $(-\infty, \infty)$</p> <p>Range: $[2, \infty)$</p> <p>Increasing Interval: $(0, \infty)$</p> <p>Decreasing Interval: $(-\infty, 0)$</p>
<p>2</p> 	<p>Equation: $y = x - 5$</p> <p>Transformations: right 5</p>	<p>Domain: $(-\infty, \infty)$</p> <p>Range: $(-\infty, 0]$</p> <p>Increasing Interval: $(-\infty, 5)$</p> <p>Decreasing Interval: $(5, \infty)$</p>
<p>3</p> 	<p>Equation: $y = x + 3$</p> <p>Transformations: left 3</p>	<p>Domain: $(-\infty, \infty)$</p> <p>Range: $[0, \infty)$</p> <p>Increasing Interval: $(-3, \infty)$</p> <p>Decreasing Interval: $(-\infty, -3)$</p>
<p>4</p> 	<p>Equation: $y = 2 x - 7$</p> <p>Transformations: Vertical stretch down 7</p>	<p>Domain: $(-\infty, \infty)$</p> <p>Range: $[-7, \infty)$</p> <p>Increasing Interval: $(0, \infty)$</p> <p>Decreasing Interval: $(-\infty, 0)$</p>
<p>5</p> 	<p>Equation: $y = -\frac{2}{3} x - 2 + 6$</p> <p>Transformations: x-axis ref. Vert. Compression right 2 down 6</p>	<p>Domain: $(-\infty, \infty)$</p> <p>Range: $(-\infty, 6]$</p> <p>Increasing Interval: $(-\infty, 2)$</p> <p>Decreasing Interval: $(2, \infty)$</p>
<p>6</p> 	<p>Equation: $y = -4 x + 1 + 4$</p> <p>Transformations: x axis reflection Vertical stretch left 2 up 4</p>	<p>Domain: $(-\infty, \infty)$</p> <p>Range: $(-\infty, 4]$</p> <p>Increasing Interval: $(-\infty, -1)$</p> <p>Decreasing Interval: $(-1, \infty)$</p>

Day 3 ~ Review of Absolute Value Equations and Inequalities & Graphs

<p>1. $2x-6 =12$</p> $\begin{array}{l} \swarrow \quad \searrow \\ 2x-6=12 \quad 2x-6=-12 \\ 2x=18 \quad 2x=-6 \\ x=9 \quad x=-3 \end{array}$	<p>2. $x-2 = 2x+8$</p> $\begin{array}{l} x-2=2x+8 \quad \text{or} \quad x-2=-2x-8 \\ -10=x \quad \quad \quad 6=-3x \\ \quad \quad \quad \quad \quad -2=x \end{array}$
<p>3. $2x-4 \leq 8$ and</p> $\begin{array}{l} -8 \leq 2x-4 \leq 8 \\ -4 \leq 2x \leq 12 \\ -2 \leq x \leq 6 \end{array}$	<p>4. $4x-8 >16$ or</p> $\begin{array}{l} 4x-8 > 16 \quad \text{or} \quad 4x-8 < -16 \\ x > 4 \quad \text{or} \quad x < -2 \end{array}$
<p>5. $x-4 < -8$ ϕ</p>	<p>6. $3x-6 \geq 12$ or</p> $\begin{array}{l} 3x-6 \geq 12 \quad \text{or} \quad 3x-6 \leq -12 \\ x \geq 6 \quad \text{or} \quad x \leq -2 \end{array}$
<p>7. $2x+8 < 4$ and</p> $\begin{array}{l} -4 < 2x+8 < 4 \\ -12 < 2x < -4 \\ -6 < x < -2 \end{array}$	<p>8. How do you graph an absolute value function? <i>Vertex-first</i></p>

5. $y = |x-4|+2$

$V(4, 2)$



Domain: $(-\infty, \infty)$

Range: $[2, \infty)$

Increasing Interval: $(4, \infty)$

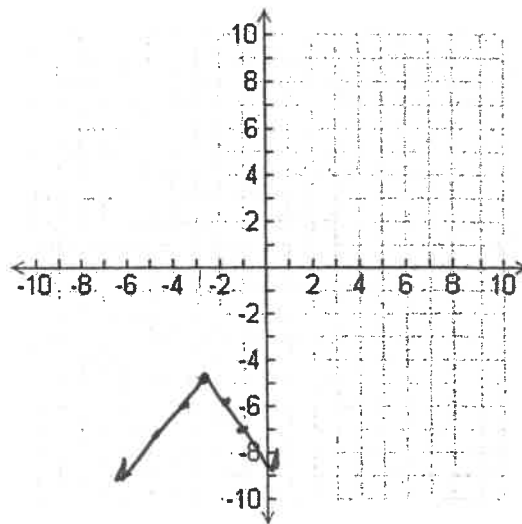
Decreasing Interval: $(-\infty, 4)$

Transformations from parent:

right 4
up 2

6. $y = -|x+3|-5$

$V(-3, -5)$



Domain: $(-\infty, \infty)$

Range: $(-\infty, -5]$

Increasing Interval: $(-\infty, -3)$

Decreasing Interval: $(-3, \infty)$

Transformations from parent:

x-axis reflection
left 3
down 5

Part II. Evaluate the piecewise function for the given values of x .

$$1. \quad f(x) = \begin{cases} x+5 & \text{if } x < -2 \\ -4 & \text{if } x \geq -2 \end{cases}$$

$$f(3) = -4$$

$$f(-4) = 1$$

$$f(-2) = -4$$

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

$$f(-2) = -3$$

$$f(6) = -9$$

$$f(1) = 1$$

$$3. \quad f(x) = \begin{cases} -2x-4 & \text{if } x \leq 2 \\ 4x-9 & \text{if } x > 2 \end{cases}$$

$$f(-4) = 4$$

$$f(8) = 23$$

$$f(2) = -8$$

$$4. \quad f(x) = \begin{cases} x-1 & \text{if } x \leq -2 \\ 2x-1 & \text{if } -2 < x \leq 4 \\ -3x+8 & \text{if } x > 4 \end{cases}$$

$$f(-1) = -3$$

$$f(-4) = -5$$

$$f(5) = -7$$

$$5. \quad f(x) = \begin{cases} x & \text{if } x \leq -1 \\ -x+4 & \text{if } x > -1 \end{cases}$$

$$f(-4) = -4$$

$$f(0) = 4$$

$$f(3) = 1$$

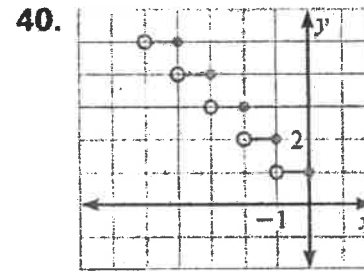
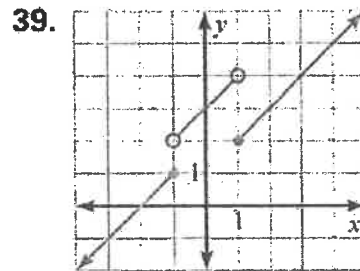
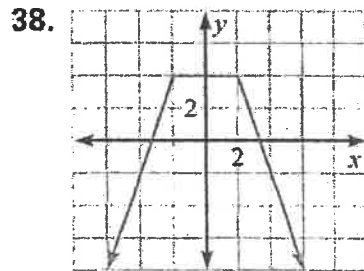
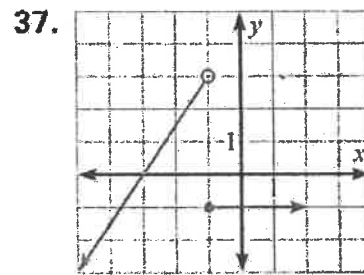
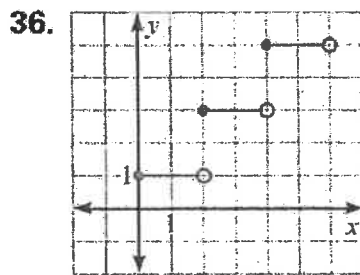
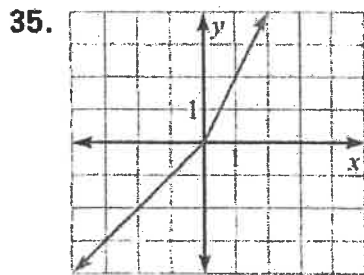
$$6. \quad f(x) = \begin{cases} 5 & \text{if } x < -2 \\ \frac{1}{2}x-6 & \text{if } -2 \leq x \leq 6 \\ -2x+10 & \text{if } x > 6 \end{cases}$$

$$f(-4) = 5$$

$$f(8) = -6$$

$$f(-2) = -7$$

Practice Evaluating Piece-Wise



#35 Find $f(0)$ and $f(-3) = -3$
 0

#36 Find $f(0)$, $f(1)$, and $f(2)$
 $f(0) = 1$
 $f(1) = 1$
 $f(2) = 3$

#37 Find $f(-2)$ and $f(-1)$
 $f(-2) = 1.5$
 $f(-1) = -1$

#38 Find $f(2)$ and $f(-3) = 0$
 $= 2$

#39 Find $f(-2)$, $f(0)$, and $f(3)$
 $= 0$ $= 3$ $= 4$

#40 Find $f(-1)$ and $f(1)$
 $= 2$ \emptyset

Using #38 find $3[f(0) - f(3)]$
 $3[2 - 0] = 6$

Evaluating Piece-Wise

$$f(x) = \begin{cases} 3x+5, & x < -1 \\ x^2, & -1 \leq x \leq 5 \\ 6, & x > 5 \end{cases} \quad g(x) = \begin{cases} \frac{1}{2}x-4, & x \leq -2 \\ 3-2x, & x > -2 \end{cases} \quad h(x) = \begin{cases} x^3, & x \leq 0 \\ -5, & 0 < x < 2 \\ -3x-1, & x \geq 2 \end{cases}$$

Evaluate the following piecewise functions using $f(x)$, $g(x)$ and $h(x)$.

1. $f(-1) = 1$

2. $g(-1) = 5$

3. $h(1) = -5$

4. $2f(6) - 3f(0) = 2(6) - 3(0) = 12$

5. $3[h(-1) + 2h(7)] = 3[-1 + 2(-22)] = -120$

6. $[g(3)]^2 = (-3)^2 = 9$

7. $5f(-2) - g(-6) - 7h(-4)$

$5(-1) - (-7) - 7(11) = -75$

Find the error(s) with the work below and then find the correct answer: (Hint: there are three errors!)

$$3f(-1) + 2g(-2) - h(1)$$

$$\underbrace{3(3(-1)+5)}_{\text{wrong}} + 2\left(\frac{1}{2}(-2)-4\right) - 5 - (-5)$$

$$3(2) + 2(-5) - 5$$

$$6 - 10 - 5$$

$$= -1$$

subbed into wrong Eq

Give the correct answer: _____

Evaluating Piecewise Functions

Evaluate the following for $f(x) = \begin{cases} 3x - 5, & x > 4 \\ x^2, & x \leq 4 \end{cases}$:

1. $f(7) = 16$

2. $f(4) = 16$

3. $f(-3) = 9$

Evaluate the following for $f(x) = \begin{cases} -2|x+1|, & x \leq 1 \\ 3, & 1 < x < 3 \\ 6-2x, & x \geq 3 \end{cases}$:

4. $f(10) = -14$

5. $f(2) = 3$

6. $f(0) = -2$

Evaluate the function for the given value of x .

$$f(x) = \begin{cases} 3, & \text{if } x \leq 0 \\ 2, & \text{if } x > 0 \end{cases}$$

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

$$h(x) = \begin{cases} \frac{1}{2}x - 4, & \text{if } x \leq -2 \\ 3 - 2x, & \text{if } x > -2 \end{cases}$$

1. $f(2) = 2$

2. $f(-4) = 3$

3. $f(0) = 3$

4. $f\left(\frac{1}{2}\right) = 2$

5. $g(7) = 13$

6. $g(0) = 5$

7. $g(-1) = 4$

8. $g(3) = 8$

9. $h(-4) = -6$

10. $h(-2) = -5$

11. $h(-1) = 5$

12. $h(6) = -9$

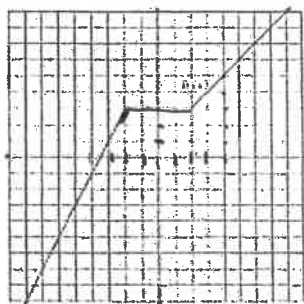
Practice Evaluating Piecewise From a Graph

3a. $h(-4) = -1$

b. $h(0) = 3$

c. $h(2) = 3$

d. $h(4) = 5$

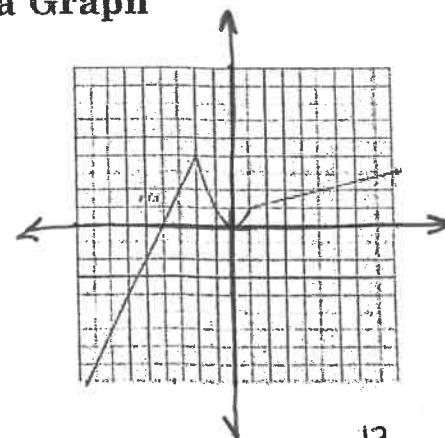


4a. $r(-3) = 2$

b. $r(-1) = 1$

c. $r(0) = 0$

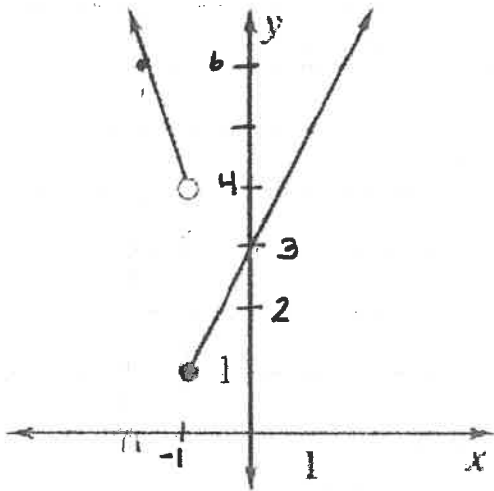
d. $r(5) = 2$



Writing the Equations of Piecewise Function given the Graph

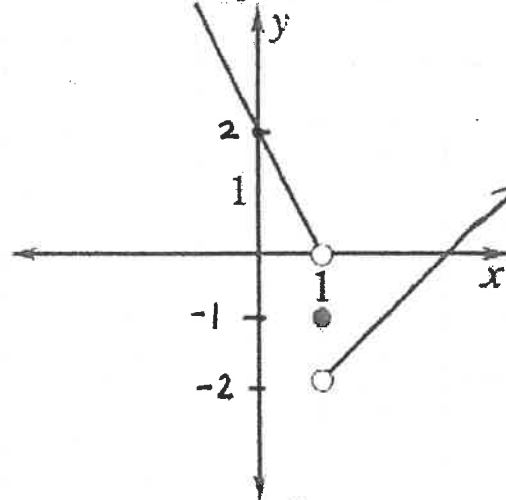
Write the equations of the following piecewise functions given the graph.

Example 1



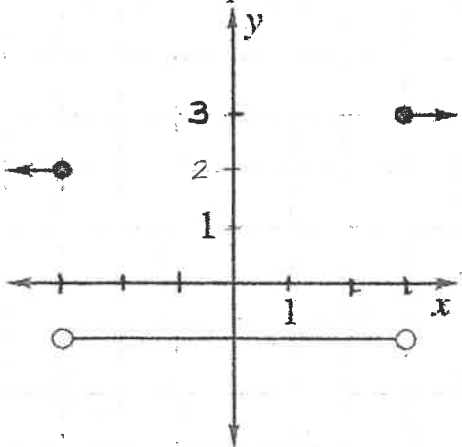
$$f(x) = \begin{cases} 2x+3 & x \geq -1 \\ -2x+2 & x < -1 \end{cases}$$

Example 2



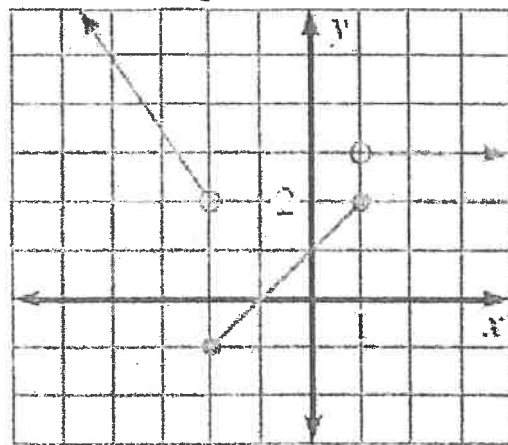
$$f(x) = \begin{cases} -2x+2 & x < 1 \\ -1 & x = 1 \\ x-3 & x > 1 \end{cases}$$

Example 3



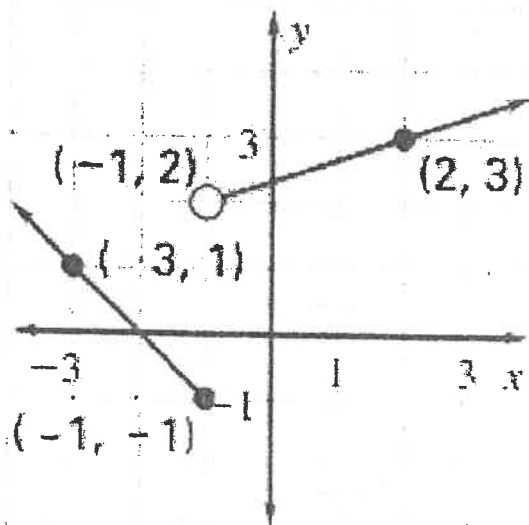
$$f(x) = \begin{cases} 2 & x \leq -3 \\ -1 & -3 < x < 3 \\ 3 & x \geq 3 \end{cases}$$

Example 4



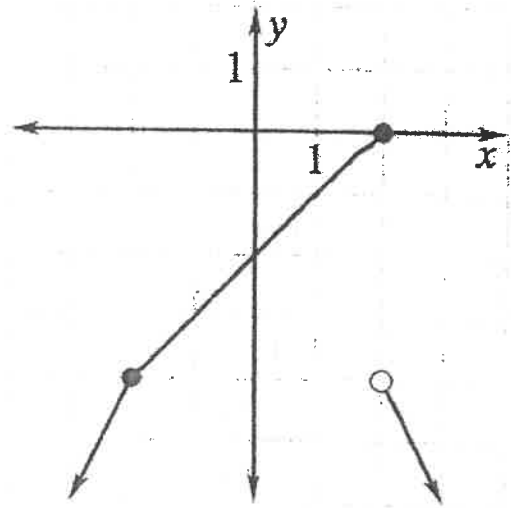
$$f(x) = \begin{cases} -\frac{3}{2}x-1 & x < -1 \\ x+1 & -2 \leq x \leq 1 \\ 3 & x > 1 \end{cases}$$

Example 5

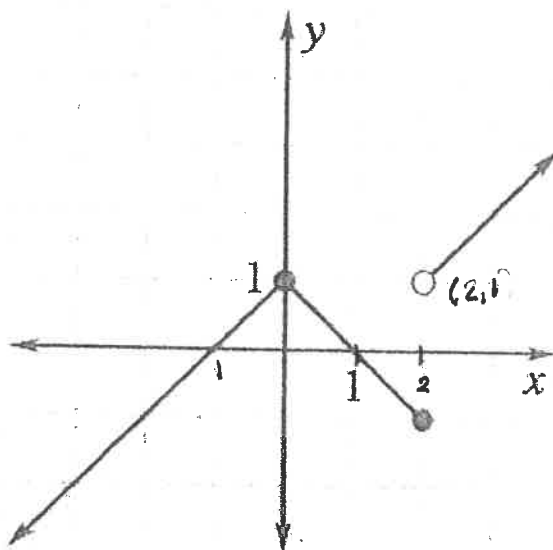


$$f(x) = \begin{cases} -x - 2 & x \leq -1 \\ \frac{1}{3}x + \frac{7}{3} & x \geq -1 \end{cases}$$

Example 6



Example 7

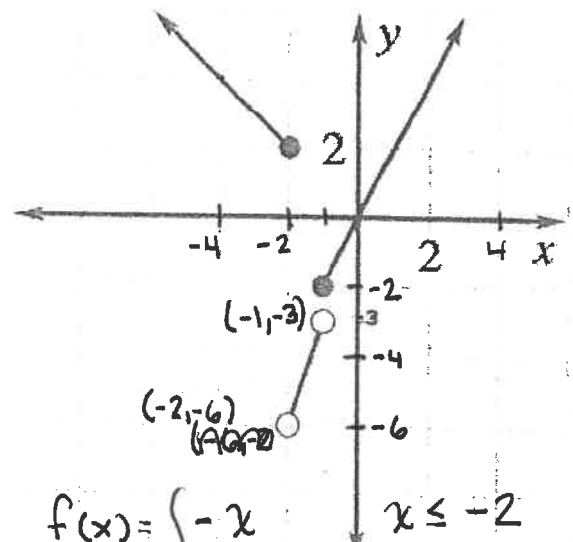


$$f(x) = \begin{cases} -|x| + 1 & x \leq 2 \\ x - 1 & x > 2 \end{cases}$$

or

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

Example 8



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

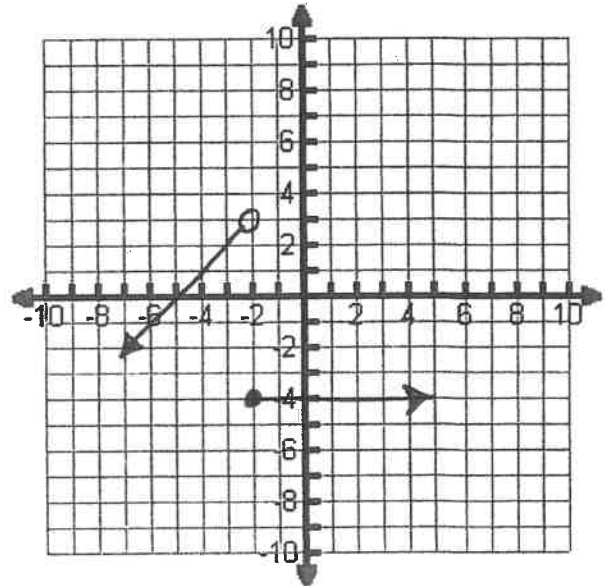
$$-3 = 3(-1) + b$$

Graphing Piece-Wise

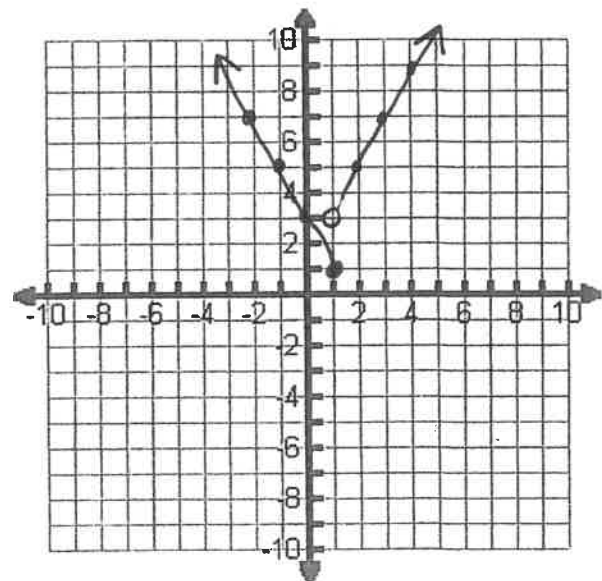
Name: _____

Part I. Graph each of the following piecewise functions. Identify any points of discontinuity.

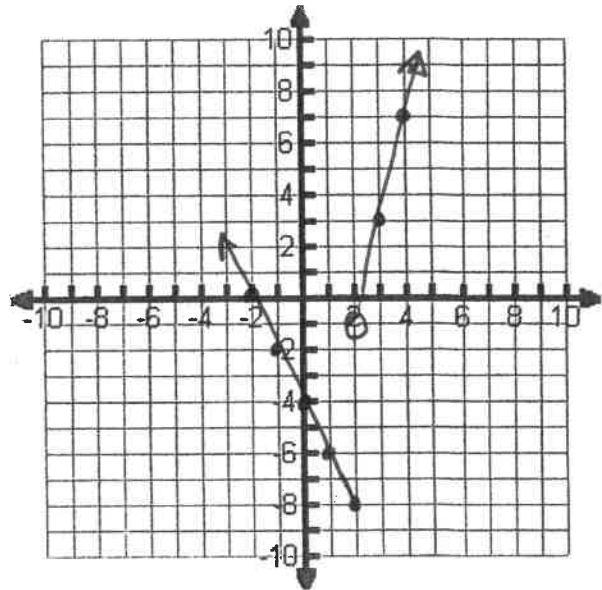
1.
$$f(x) = \begin{cases} x+5 & \text{if } x < -2 \\ -4 & \text{if } x \geq -2 \end{cases}$$



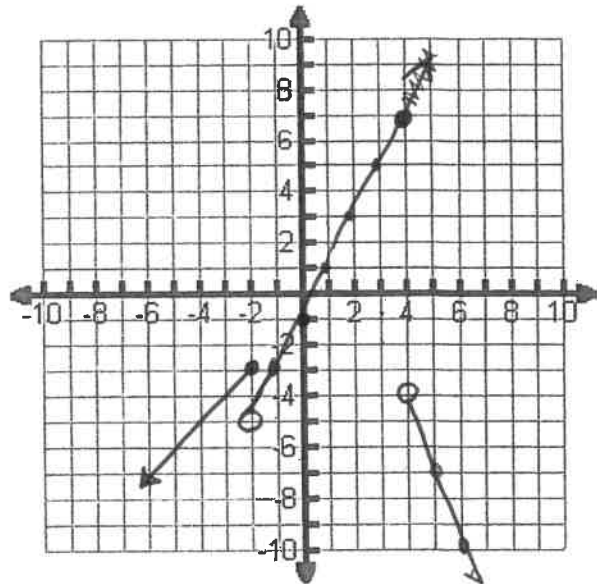
2.
$$f(x) = \begin{cases} 2x+1 & \text{if } x < 1 \\ -2x+3 & \text{if } x \geq 1 \end{cases}$$



3. $f(x) = \begin{cases} -2x - 4 & \text{if } x \leq 2 \\ 4x - 9 & \text{if } x > 2 \end{cases}$



4. $f(x) = \begin{cases} x - 1 & \text{if } x \leq -2 \\ 2x - 1 & \text{if } -2 < x \leq 4 \\ -3x + 8 & \text{if } x > 4 \end{cases}$



13. $f(x) = \begin{cases} x-4, & \text{if } x \leq 1 \\ 3x, & \text{if } x > 1 \end{cases}$ **E**

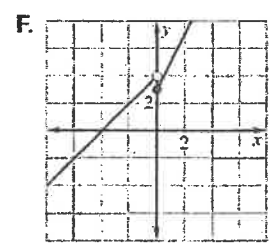
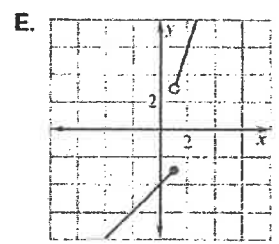
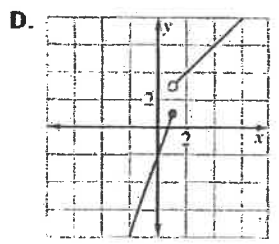
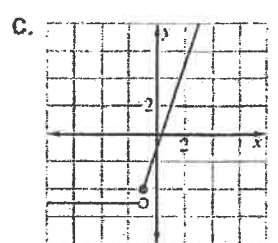
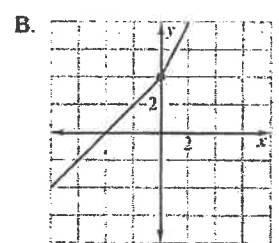
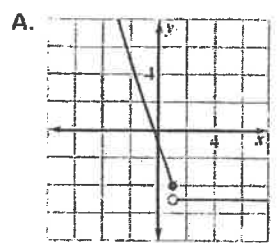
14. $f(x) = \begin{cases} x+4, & \text{if } x \leq 0 \\ 2x+4, & \text{if } x > 0 \end{cases}$ **B**

15. $f(x) = \begin{cases} 3x-2, & \text{if } x \leq 1 \\ x+2, & \text{if } x > 1 \end{cases}$ **D**

16. $f(x) = \begin{cases} 2x+3, & \text{if } x \geq 0 \\ x+4, & \text{if } x < 0 \end{cases}$ **F**

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

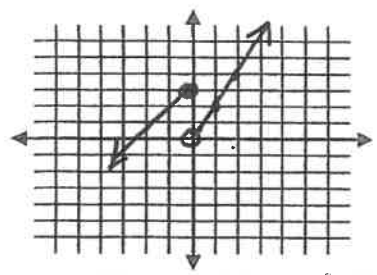
18. $f(x) = \begin{cases} -3x-1, & \text{if } x \leq 1 \\ -5, & \text{if } x > 1 \end{cases}$ **a**



Graph the function.

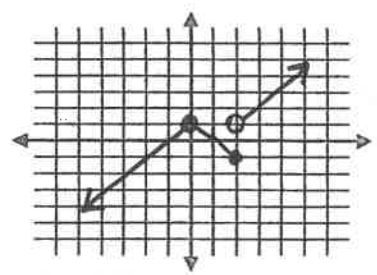
19.

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



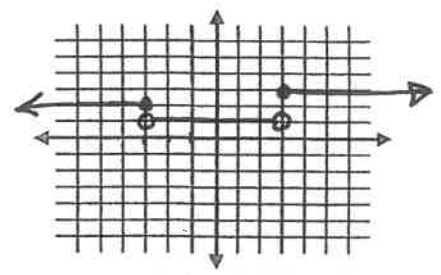
20.

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



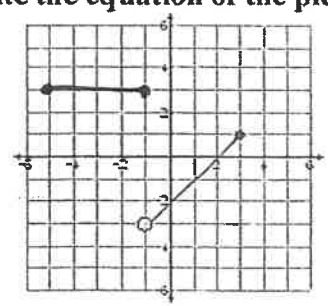
21.

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



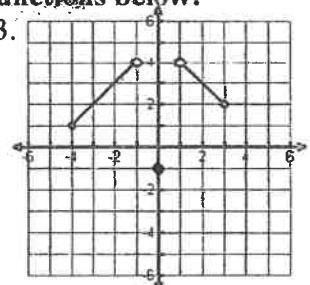
Write the equation of the piecewise functions below.

22.



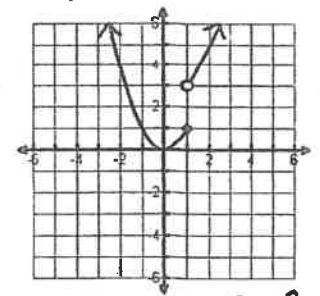
$f(x) = \begin{cases} 3 & -5 \leq x \leq -1 \\ x-2 & -1 < x \leq 3 \end{cases}$

23.



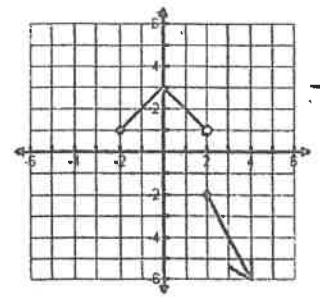
$f(x) = \begin{cases} x+5 & -4 \leq x < -1 \\ -1 & x = 0 \\ -x+5 & 1 < x < 3 \end{cases}$

24.

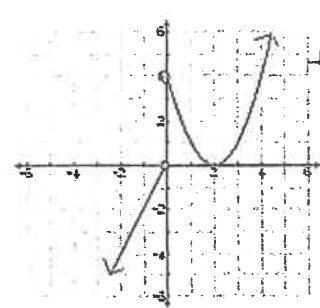


$f(x) = \begin{cases} x^2 & x \leq 1 \\ 2x+1 & x > 1 \end{cases}$

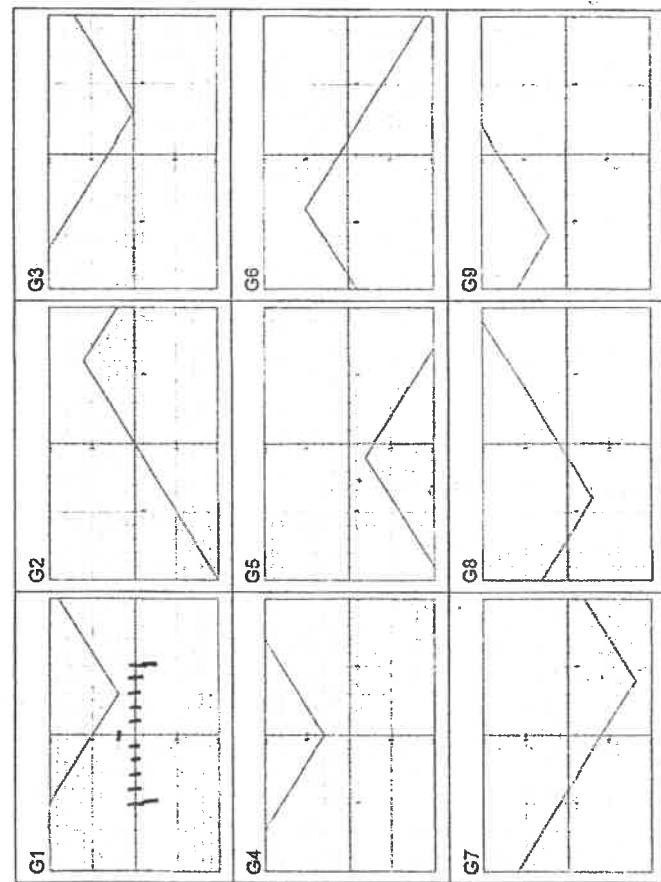
25.



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



$f(x) = \begin{cases} (x-2)^2 & x > 0 \\ 2x & x < 0 \end{cases}$



A1	$y = x-3 $	A2	$y = - x-6 + 6$	A3	$y = x-3 + 2$
A4	$y = x+6 + 2$	A5	$y = - x+4 + 5$	A6	$y = x + 3$
A7	$y = x-4 - 8$	A8	$y = x+4 - 3$	A9	$y = - x+1 - 2$

P1	$f(x) = \begin{cases} -x+5 & x \leq 3 \\ x-1 & x > 3 \end{cases}$	P2	$f(x) = \begin{cases} x & x \leq 6 \\ -x+12 & x > 6 \end{cases}$	P3	$f(x) = \begin{cases} x-1 & x \leq -1 \\ -x-3 & x > -1 \end{cases}$
P4	$f(x) = \begin{cases} -x-4 & x \leq 4 \\ x-12 & x > 4 \end{cases}$	P5	$f(x) = \begin{cases} -x-7 & x \leq -4 \\ x+1 & x > -4 \end{cases}$	P6	$f(x) = \begin{cases} x+9 & x \leq -4 \\ -x+1 & x > -4 \end{cases}$
P7	$f(x) = \begin{cases} -x+3 & x \leq 3 \\ x-3 & x > 3 \end{cases}$	P8	$f(x) = \begin{cases} -x+3 & x \leq 0 \\ x+3 & x > 0 \end{cases}$	P9	$f(x) = \begin{cases} -x-4 & x \leq -6 \\ x+8 & x > -6 \end{cases}$

Graph	ABSOLUTE VALUE FUNCTION	PIECEWISE FUNCTION	Table
G1			
G2			
G3			
G4			
G5			
G6			
G7			
G8			
G9			