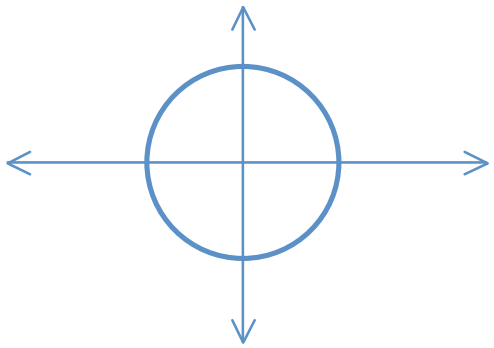
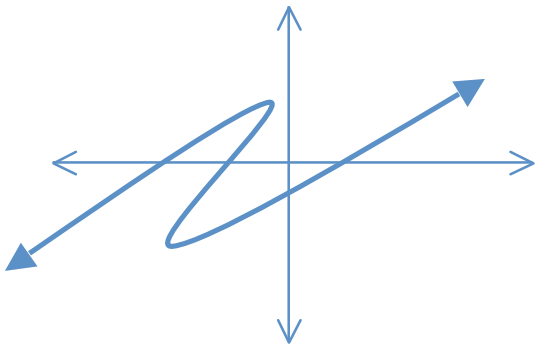
Quiz #2 Review: Chapter 2.1- 2.4 Name: _____

Complete this review without a calculator.

SECTION 1: FUNCTIONS AND PROPERTIES (DAYS 1 AND 3)

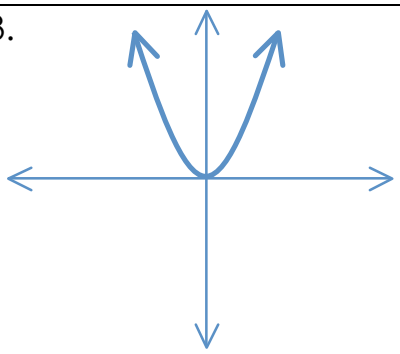
Determine if each relation is a function. Explain.

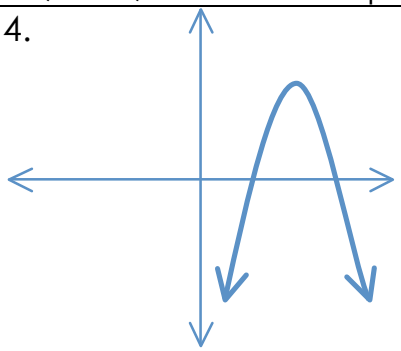
1. $x^2 + y^2 = 5$	2. $y + 1 = 4\sqrt{x-2}$
3. $y - 2 = 10(x - 3)$	4. $x - 3 = y^2 + 8$
5. 	6. 

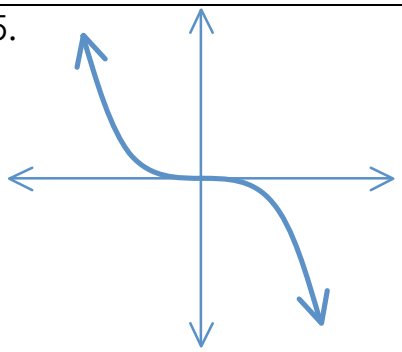
Find the domain and write it in interval notation.

7. $f(x)=3x^2+7$	8. $f(x)=\frac{5}{2x+1}$
9. $f(x)=\frac{x}{-4x-7}$	10. $f(x)=\sqrt{x-6}$
11. $f(x)=\sqrt{-3x+1}$	12. $f(x)=\frac{10x^2}{\sqrt{-x+5}}$

Determine if the function is even, odd, or neither. Explain.

13. 

14. 

15. 

Determine algebraically if the function is even, odd, or neither.

16. $f(x) = -8x^2$

17. $f(x) = x^3 + 4$

18. $f(x) = 5x^4 + x^2 + 3$

19. $f(x) = -2x^3 - 5x^2$

20. $f(x) = -x^4 + 2x - 1$

21. $f(x) = 4x^3 + 7x$

Find all the intercepts.

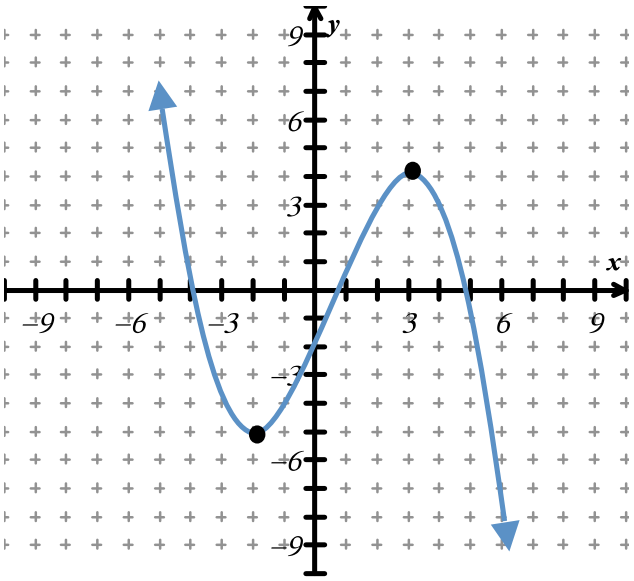
22. $f(x) = 2x^2 - 26x - 60$

23. $f(x) = 2x^3 - 11x^2 - 21x$

SECTION 2: GRAPHS AND KEY FEATURES

Answer the questions about the graph. Use interval notation.

1.



Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

Local Maxima: _____

Local Minimum: _____

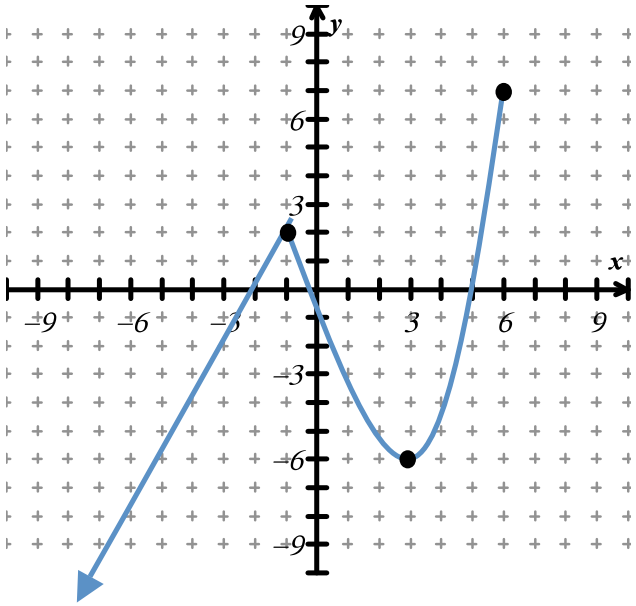
f(x) < 0: _____

f(x) ≥ 0: _____

ALL Intercepts: _____

In how many places will y = 4 intercept the graph?

2.



Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

Local Maximum: _____

Local Minima: _____

f(x) < 0: _____

f(x) ≥ 0: _____

ALL Intercepts: _____

In how many places will y = $-\frac{1}{3}$ intercept the graph?

SECTION 3: DiFFERENCE QUOTIENT AND AVERAGE RATE OF CHANGE

Evaluate the function: $f(x) = -2x^2 - 4x + 1$

1. $f(-3) =$

2. $f(x + 2) =$

3. For the function: $f(x) = x^2 + 3x$

$$\frac{f(x+h)-f(x)}{h} =$$

4. For the function: $f(x) = 2x^2 + 3x + 5$

$$\frac{f(x+h)-f(x)}{h} =$$

5. For the function: $f(x) = 2-\frac{1}{(x-1)^2}$

$$f(x+2) =$$

Given the function: $f(x) = x^2 + 4x + 1$, answer the following questions.

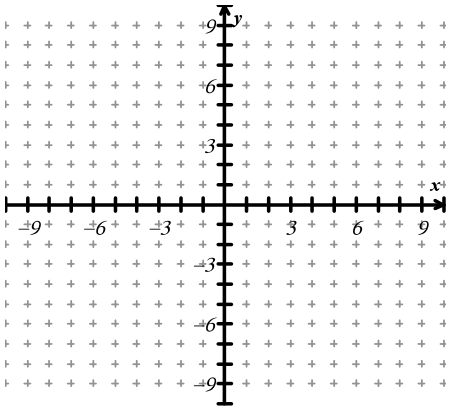
6. Find the average rate of change from 1 to x.	7. Find the slope of the secant line containing the points (1, f(1)) and (3, f(3)).
8. Find the equation of the secant line containing (1, f(1)) and (3, f(3)).	

Given the function: $f(x) = -3x^2 - 5x$, answer the following questions.

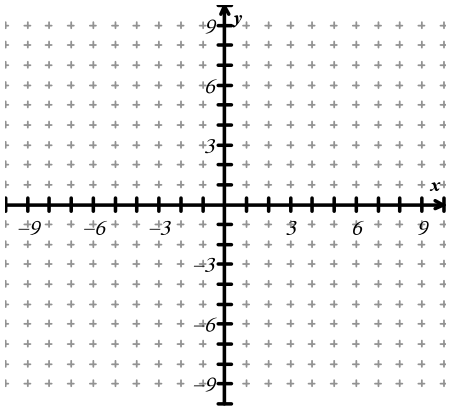
9. Find the average rate of change from 1 to x.	10. Find the slope of the secant line containing the points (2, f(2)) and (5, f(5)).
11. Find the equation of the secant line (2, f(2)) and (5, f(5)).	

SECTION 4: PIECEWISE FUNCTIONS

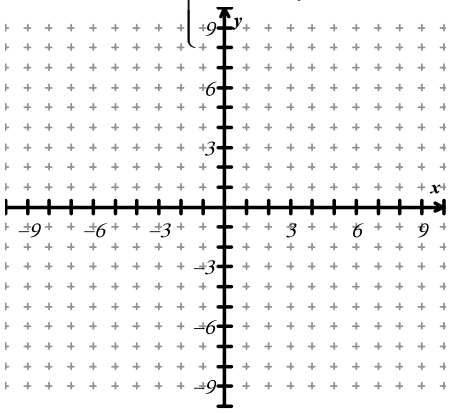
1. $$f(x)=\begin{cases}\frac{2}{3}x+3, & x<0\\ x^2+1 & x\geq 0\end{cases}$$



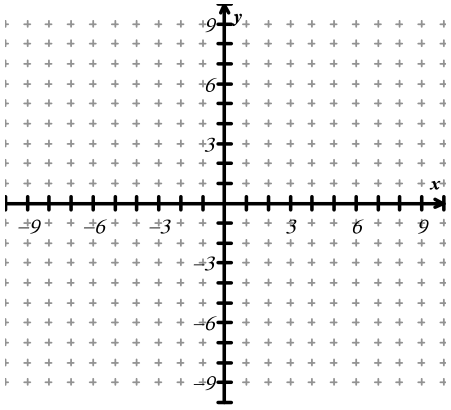
2. $$f(x)=\begin{cases}-2x-3, & x<1\\ \sqrt{x}+2, & x\geq 1\end{cases}$$



3. $$f(x)=\begin{cases}\frac{1}{2}x, & x<-2\\ -2, & -2\leq x\leq 0\\ -x+6, & x>0\end{cases}$$

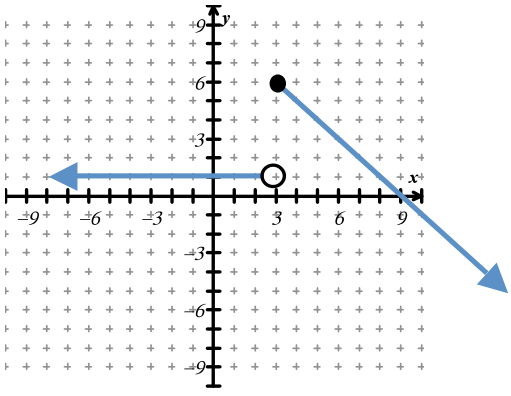


4. $$f(x)=\begin{cases}x^2-2, & -3<x<-1\\ -|x|+3, & -1<x\leq 1\\ \sqrt{x}-2, & 1<x<9\end{cases}$$



Write the equation of the graph.

5.



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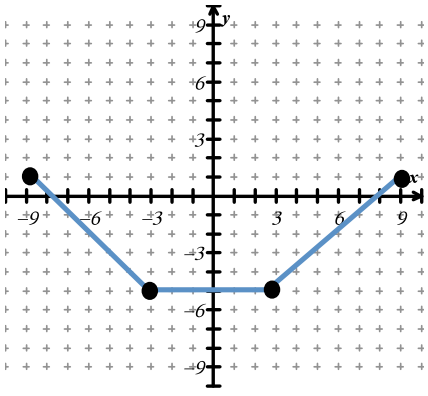


DAY 5: GRAPHING TRANSFORMATIONS

1. Draw the shape of each graph.

Absolute Value	Quadratic	Cubic
Radical	Greatest Integer Function	Constant
Reciprocal	Cube Root	

If $y = x^3$ is transformed as described below, write the new function.

2. Shifted left 5 units	3. Shifted down 12 units
4. Reflected about the y-axis	5. Vertically stretched by a factor of 4

If $y = \sqrt{x}$ is transformed as described below, write the new function.

6. Shifted up 4 units. Reflect about the x-axis. Reflect about the y-axis.	7. Reflect about the x-axis. Shift down 1 units. Shift left 3 units.

Exercises

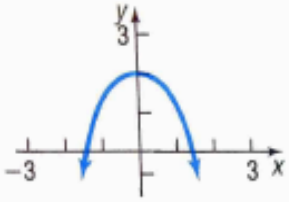
In Problems 7–18, match each graph to one of the following functions.

A. $y = x^2 + 2$ B. $y = -x^2 + 2$ C. $y = |x| + 2$ D. $y = -|x| + 2$

E. $y = (x - 2)^2$ F. $y = -(x + 2)^2$ G. $y = |x - 2|$ H. $y = -|x + 2|$

I. $y = 2x^2$ J. $y = -2x^2$ K. $y = 2|x|$ L. $y = -2|x|$

7.



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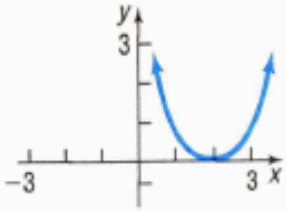

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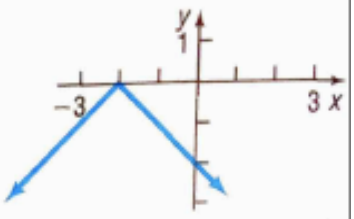

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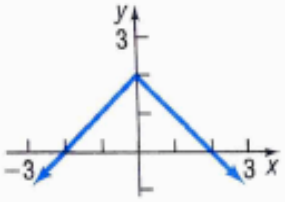

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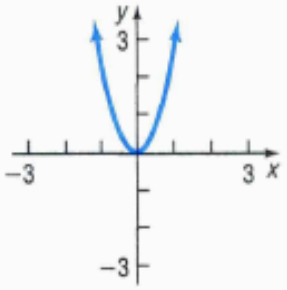

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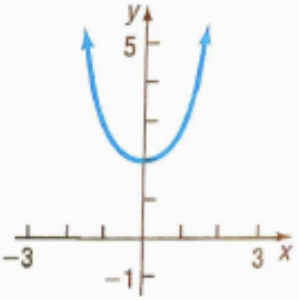

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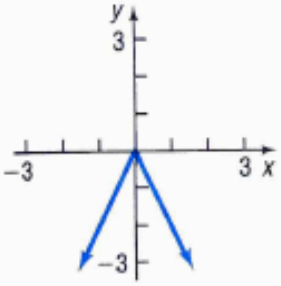

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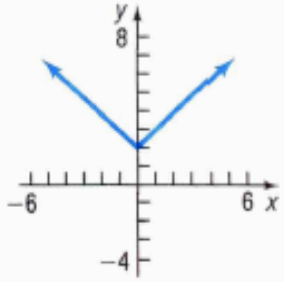

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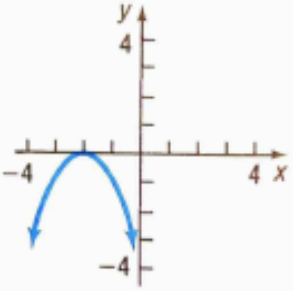

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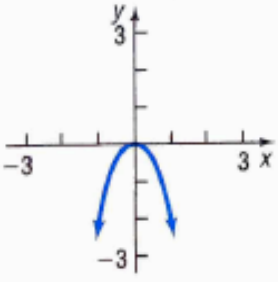

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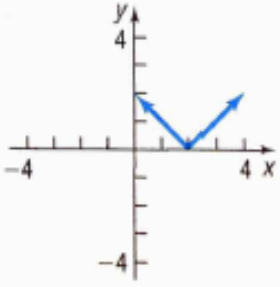

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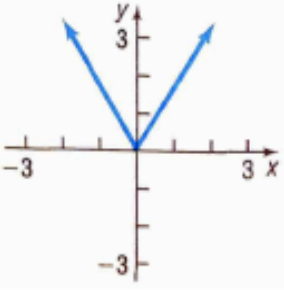

Quick Questions: For each question, circle either A or B.

	QUESTION	ANSWER A	ANSWER B
1	Function or not: $x + y = 2x + 1$	Yes	No
2	Function or not: $4y^2 = 3x$	Yes	No
3	Function or not: $5x^2 + 2 = y$	Yes	No
4	Find the domain: $f(x) = \frac{1}{x}$	$(-\infty, 0) \cup [0, \infty)$	$\Re, x \neq 0$
5	Find the domain: $f(x) = \frac{x}{3x-1}$	$x > \frac{1}{3}$	$\Re, x \neq \frac{1}{3}$
6	Find the domain: $f(x) = \sqrt{-x+4}$	$x \geq 4$	$x \leq 4$
7	Find the domain: $f(x) = \frac{1}{\sqrt{x}}$	$x > 0$	$x \geq 0$
8	When writing intervals of increasing and decreasing, use:	x-values	y-values
9	How would you write a maxima:	(2, 5)	$x = 2$
10	Which set could represent the interval where $f(x) < 0$?	(0, 4)	[0, 4]
12	Which set could represent the interval where $f(x) \geq 0$?	(0, 4)	[0, 4]
13	What is the rule for even functions:	$f(-x) = f(x)$	$f(-x) = -f(x)$
14	What is the rule for odd functions:	$f(-x) = f(x)$	$f(-x) = -f(x)$
15	Which could be the set of intercepts?	{(0, 2), (3, 0), (5, 0)}	{(0, 2), (1, 1)}
16	Which function would you use to evaluate $f\left(-\frac{1}{2}\right)$? $f(x) = \begin{cases} \frac{1}{2}x, & x < -2 \\ -2, & -2 \leq x \leq 0 \\ -x+1, & x > 0 \end{cases}$	Equation 1	Equation 2