Class:	**ALGEBRA 2**		
Teacher:	DAILY	LUNETTA	PEREIRA
Period:	1, 2	3, 5, 6	3, 4
Assignment:	**WEEK 3**		

WEEK	ASSIGNMENT	DATE
1	I can add complex numbers. (Practice, do as many as you wish. Answers provided.)	4/20
	Are You Ready? I can add complex numbers. (Required, complete after you have practiced.)	
	I can subtract complex numbers. (Practice, do as many as you wish. Answers provided.)	4/21
	Are You Ready? I can subtract complex numbers. (Required, complete after you have practiced.)	
	I can multiply complex numbers. (Practice, do as many as you wish. Answers provided.)	4/22
	Are You Ready? I can multiply complex numbers. (Required, complete after you have practiced.)	
	I can simplify complex expressions. (Practice, do as many as you wish. Answers provided.)	4/23
	Are You Ready? I can simplify complex expressions. (Required, complete after you have practiced.)	
	N-CN.2 Standard Assessment (Required, complete after you are ready.)	4/24
2	I can solve quadratic equations that have complex solutions. (Day 1) (Practice)	4/27
	Are You Ready? I can solve quadratic equations…(Day 1) (Required)	
	I can solve quadratic equations that have complex solutions. (Day 2) (Practice)	4/28
	Are You Ready? I can solve quadratic equations…(Day 2) (Required)	
	I can solve quadratic equations that have complex solutions. (Day 3) (Practice)	4/29
	Are You Ready? I can solve quadratic equations…(Day 3) (Required)	
	N-CN.7 Standard Assessment (Required)	4/30
	I can graph equations on coordinate axes with labels and scales. (Practice)	5/1
	Are You Ready? I can graph equations on coordinate axes… (Required)	
3	I can identify the key features of quadratic functions. (Practice)	5/4
	Are You Ready? I can identify the key features of quadratic functions. (Required)	
	I can sketch functions that show key features. (Practice)	5/5
	Are You Ready? I can sketch functions that show key features. (Required)	
	F-IF.4 Standard Assessment (Required)	5/6
	I can identify zeros of polynomial functions. (Practice; zeros column only) **Are You Ready? I can identify zeros of polynomial functions.** (Required)	5/7
	I can show end behavior of polynomial functions. (Practice; end behavior column only)	5/8
	Are You Ready? I can show end behavior of polynomial functions. (Required)	

I can identify the key features of quadratic functions.

The key features of a quadratic function are the:

- vertex
- intervals where the function is increasing/decreasing
- intervals where the function is positive/negative
- end behavior
- x-intercepts
- local maximum or minimum.

The vertex is the point where the parabola 'bends' and can be determined by inspecting the graph.

When thought of as a roller-coaster, increasing intervals are where the function is going uphill. Decreasing would be when it is going downhill. The endpoints of these intervals will never be included, as they will either be an infinity or the x-coordinate of the vertex where the function is momentarily constant.

Positive intervals occur where the function is above the x-axis, negative where it is below the x-axis. The endpoints will never be included, as they will either be an infinity or an x-intercept where the function has the value zero.

The end behavior of a parabola is based on the sign of the a-value. A positive a-value means the parabola opens upward, so the end behavior is going to infinity on both sides. A negative a-value means the parabola opens downward, so the end behavior is going to negative infinity on both sides.

The x-intercepts are the points where the parabola crosses the x-axis and can be determined by inspecting the graph.

Whether the parabola has a maximum or a minimum is based on the sign of the a-value. A positive a-value means the parabola opens upward, so has a minimum at the vertex. A negative a-value means the parabola opens downward, so has a maximum at the vertex.

I can sketch functions that show key features.

From a quadratic equation in vertex form, begin by plotting the vertex at the point (h, k). From the vertex, move 1 unit left or right and move up or down the amount of the a-value to plot two more points. From the vertex, move 2 units left or right and move up or down four times the amount of the a-value to plot two more points. This will provide five points for the sketch of the graph.

I can identify zeros of polynomial functions

The zeros of a polynomial are the zeros of each factor. To determine the zero, you can set the factor equal to zero and solve for x. The zeros of factors that have the form $ax + b$ will always have the structure $\frac{-b}{a}$. This is also true for factors that have the form ax since the b-value would be 0, so the zero will also be 0.

I can show end behavior of polynomial functions.

The end behavior of a polynomial function is based on the sign of the a-value. A positive a-value means the polynomial opens upward, so the end behavior is going to infinity on both sides. A negative a-value means the polynomial

opens downward, so the end behavior is going to negative infinity on both sides.

I can identify the key features of quadratic functions

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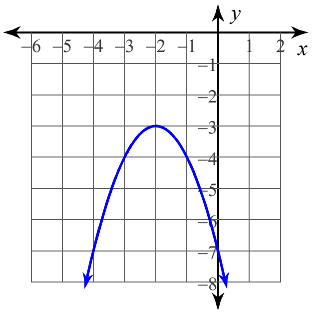

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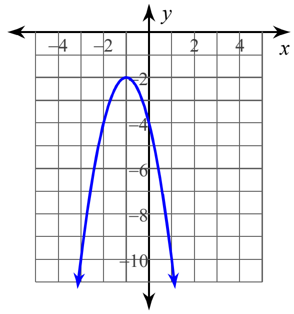

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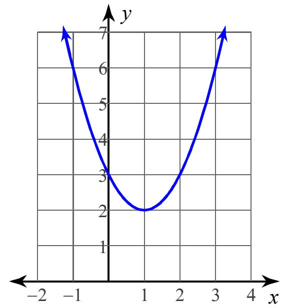

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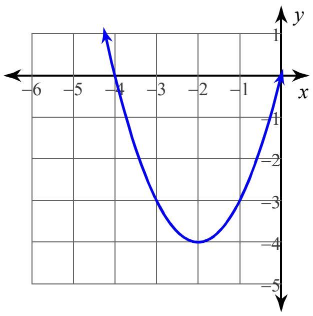

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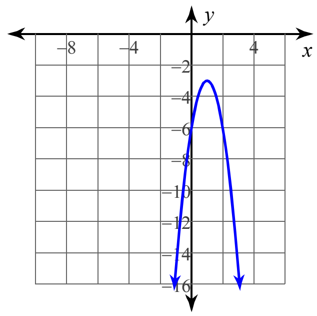

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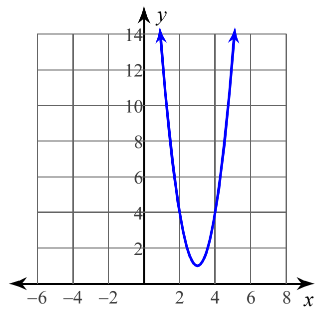

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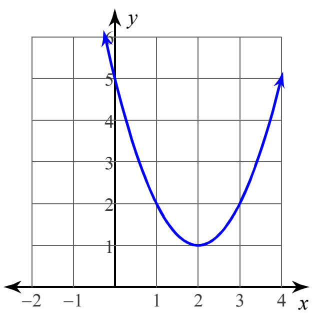

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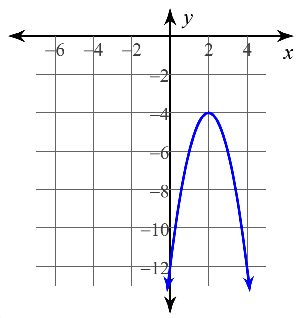

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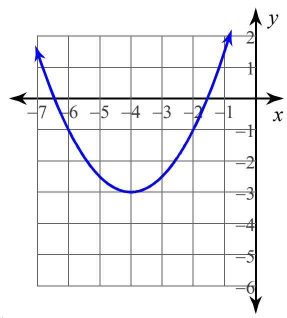

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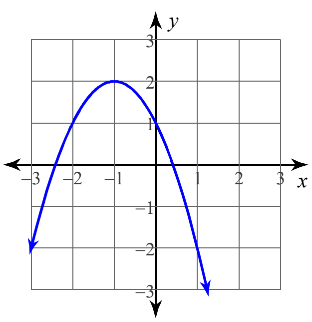

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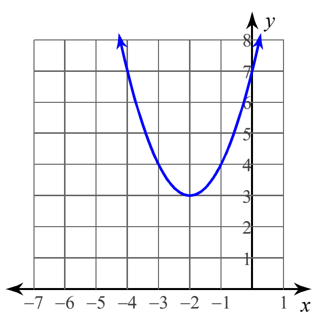

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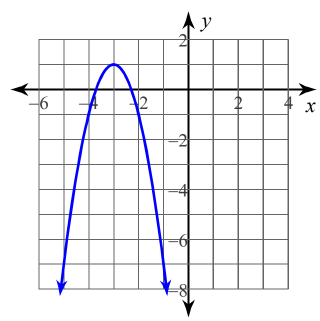

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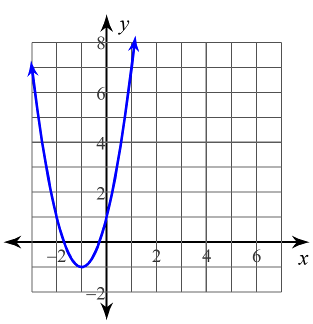

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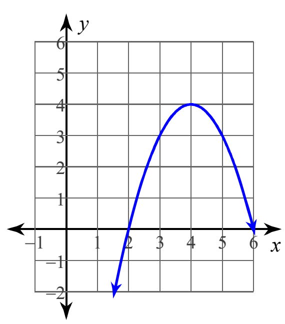

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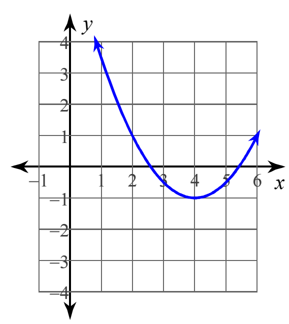

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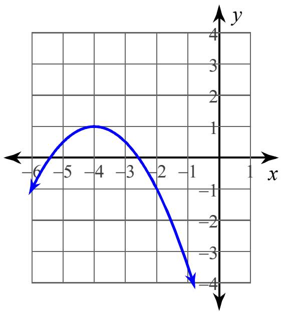
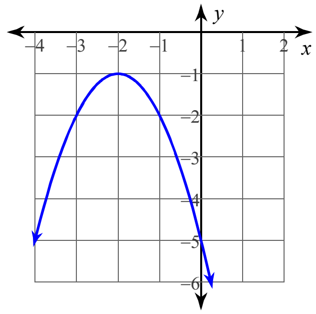
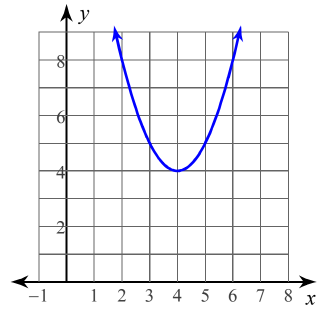

y
x
4
3
2
1
−6
−5
−4
−3
−2
−1
1
−1
−2
−3
−4

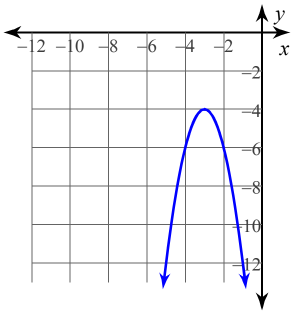
17)


y
x
−4
−3
−2
−1
1
2
−1
−2
−3
−4
−5
−6

18)


y
x
8
6
4
2
−1
1
2
3
4
5
6
7
8

19)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x
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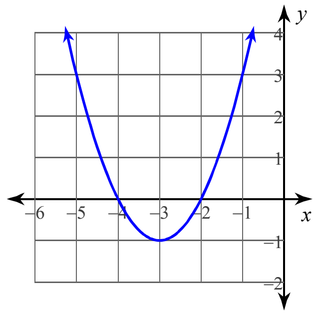
−10
−8
−6
−4
−2
−2
−4
−6
−8
−10
−12

20)


y
x
4
3
2
1
−6
−5
−4
−3
−2
−1
−1
−2

I can identify the key features of quadratic functions **Solutions**

	Vertex	Inc/Dec	Pos/Neg	End Behavior	x-int	max/min
1	$(-2,-3)$	I: $(-\infty,-2)$ D: $(-2,\infty)$	P: n/a N: $(-\infty,\infty)$	As $x\to-\infty, y\to-\infty$ As $x\to\infty, y\to-\infty$	n/a	max: $(-2,-3)$
2	$(-1,-2)$	I: $(-\infty,-1)$ D: $(-1,\infty)$	P: n/a N: $(-\infty,\infty)$	As $x\to-\infty, y\to-\infty$ As $x\to\infty, y\to-\infty$	n/a	max: $(-1,-2)$
3	$(1,2)$	I: $(1,\ \infty)$ D: $(-\infty,1)$	P: $(-\infty,\infty)$ N: n/a	As $x\to-\infty, y\to\infty$ As $x\to\infty, y\to\infty$	n/a	min: $(1,2)$
4	$(-2,-4)$	I: $(-2,\ \infty)$ D: $(-\infty,-2)$	P: $(-\infty,\ -4),(0,\infty)$ N: $(-4,0)$	As $x\to-\infty, y\to\infty$ As $x\to\infty, y\to\infty$	$-4, 0$	min: $(-2,-4)$
5	$(1,-3)$	I: $(-\infty,1)$ D: $(1,\infty)$	P: n/a N: $(-\infty,\infty)$	As $x\to-\infty, y\to-\infty$ As $x\to\infty, y\to-\infty$	n/a	max: $(1,-3)$
6	$(3,1)$	I: $(3,\infty)$ D: $(-\infty,3)$	P: $(-\infty,\infty)$ N: n/a	As $x\to-\infty, y\to\infty$ As $x\to\infty, y\to\infty$	n/a	min: $(3,1)$
7	$(2,1)$	I: $(2,\infty)$ D: $(-\infty,2)$	P: $(-\infty,\infty)$ N: n/a	As $x\to-\infty, y\to\infty$ As $x\to\infty, y\to\infty$	n/a	min: $(2,1)$
8	$(2,-4)$	I: $(-\infty,2)$ D: $(2,\infty)$	P: n/a N: $(-\infty,\infty)$	As $x\to-\infty, y\to-\infty$ As $x\to\infty, y\to-\infty$	n/a	max: $(2,-4)$
9	$(-4,-3)$	I: $(-4,\infty)$ D: $(-\infty,-4)$	P: $(-\infty,-6.5),(-1.5,\infty)$ N: $(-6.5,-1.5)$	As $x\to-\infty, y\to\infty$ As $x\to\infty, y\to\infty$	$-6.5,-1.5$	min: $(-4,-3)$
10	$(-1,2)$	I: $(-\infty,-1)$ D: $(-1,\infty)$	P: $(-2.5,0.5)$ N: $(-\infty,-2.5),(0.5.\infty)$	As $x\to-\infty, y\to-\infty$ As $x\to\infty, y\to-\infty$	$-2.5, 0.5$	max: $(-1,2)$
11	$(-2,3)$	I: $(-2,\infty)$ D: $(-\infty,-2)$	P: $(-\infty,\infty)$ N: n/a	As $x\to-\infty, y\to\infty$ As $x\to\infty, y\to\infty$	n/a	min: $(-2,3)$
12	$(-3,1)$	I: $(-\infty,-3)$ D: $(-3,\infty)$	P: $(-3.5,-2.5)$ N: $(-\infty,-3.5),(-2.5,\infty)$	As $x\to-\infty, y\to-\infty$ As $x\to\infty, y\to-\infty$	$-3.5,-2.5$	max: $(-3,1)$
13	$(-1,1)$	I: $(-1,\infty)$ D: $(-\infty,-1)$	P: $(-\infty,-1.5),(-0.5,\infty)$ N: $(-1.5,-0.5)$	As $x\to-\infty, y\to\infty$ As $x\to\infty, y\to\infty$	$-1.5,-0.5$	min: $(-1,1)$
14	$(4,4)$	I: $(-\infty,4)$ D: $(4,\infty)$	P: $(2,6)$ N: $(-\infty,2),(6,\infty)$	As $x\to-\infty, y\to-\infty$ As $x\to\infty, y\to-\infty$	$2, 6$	max: $(4,4)$
15	$(4,-1)$	I: $(4,\infty)$ D: $(-\infty,4)$	P: $(-\infty,2.5),(5.5,\infty)$ N: $(2.5,5.5)$	As $x\to-\infty, y\to\infty$ As $x\to\infty, y\to\infty$	$2.5, 5.5$	min: $(4,-1)$
16	$(-4,1)$	I: $(-\infty,-4)$ D: $(-4,\infty)$	P: $(-5.5,-2.5)$ N: $(-\infty,-5.5),(-2.5,\infty)$	As $x\to-\infty, y\to-\infty$ As $x\to\infty, y\to-\infty$	$-5.5,-2.5$	max: $(-4,1)$
17	$(-2,-1)$	I: $(-\infty,-2)$ D: $(-2,\infty)$	P: n/a N: $(-\infty,\infty)$	As $x\to-\infty, y\to-\infty$ As $x\to\infty, y\to-\infty$	n/a	max: $(-2,-1)$
18	$(4,4)$	I: $(4,\infty)$ D: $(-\infty,4)$	P: $(-\infty,\infty)$ N: n/a	As $x\to-\infty, y\to\infty$ As $x\to\infty, y\to\infty$	n/a	min: $(4,4)$
19	$(-3,-4)$	I: $(-\infty,-3)$ D: $(-3,\infty)$	P: n/a N: $(-\infty,\infty)$	As $x\to-\infty, y\to-\infty$ As $x\to\infty, y\to-\infty$	n/a	max: $(-3,-4)$
20	$(-3,-1)$	I: $(-3,\infty)$ D: $(-\infty,-3)$	P: $(-\infty,-4),(-2,\infty)$ N: $(-4,-2)$	As $x\to-\infty, y\to\infty$ As $x\to\infty, y\to\infty$	$-4,-2$	min: $(-3,-1)$

I can sketch functions that show key features

Sketch the graph of each function.

1) $y = -(x-4)^2 + 3$

2) $y = (x-3)^2 - 2$

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

4) $y = -2(x-2)^2 - 2$

5) $y = 2(x-4)^2 + 3$

6) $y = 2(x-4)^2 + 1$

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

8) $y = -(x-4)^2 - 2$

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

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

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

12) $y = -2(x+2)^2 + 4$

13) $y = (x+1)^2 - 4$

14) $y = (x+4)^2 + 2$

15) $y = (x+3)^2 - 2$

16) $y = -(x+3)^2 + 3$

17) $y = (x-4)^2 - 1$

18) $y = -2(x-3)^2 - 1$

19) $y = -(x+3)^2 - 1$

20) $y = -2(x+3)^2 - 1$

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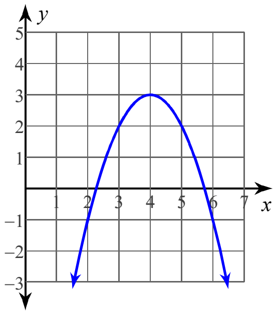

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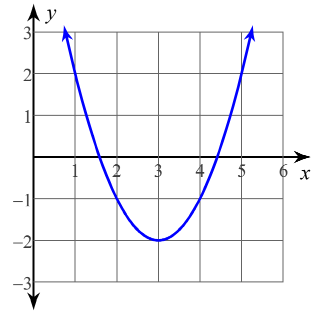

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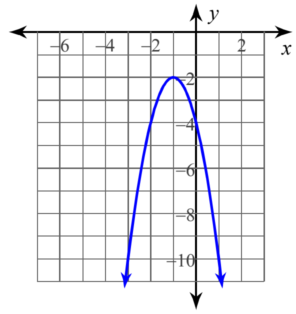

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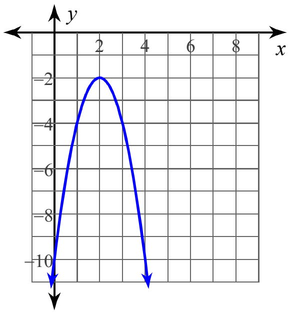

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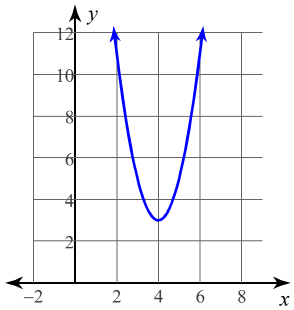

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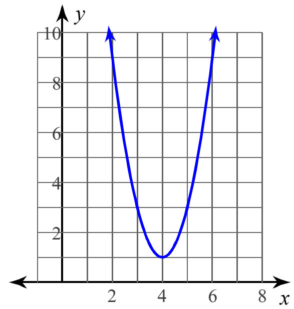

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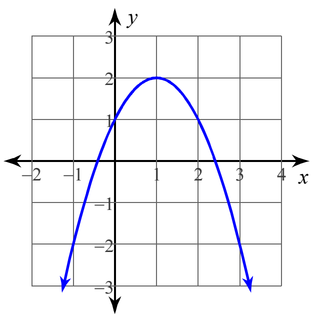

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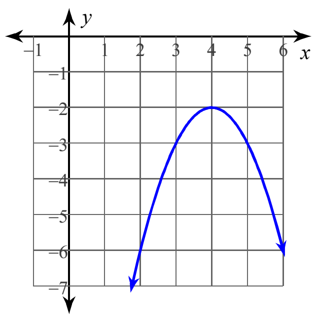

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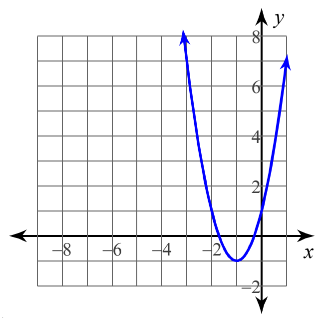

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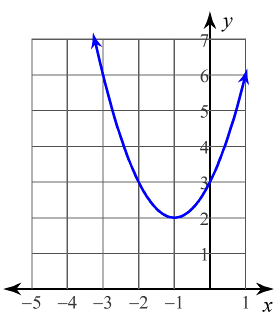

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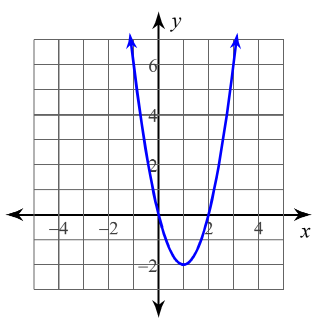

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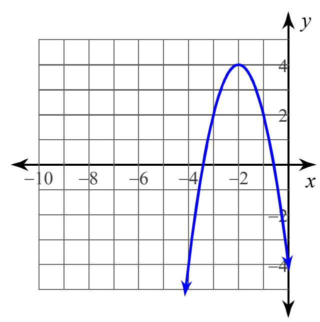

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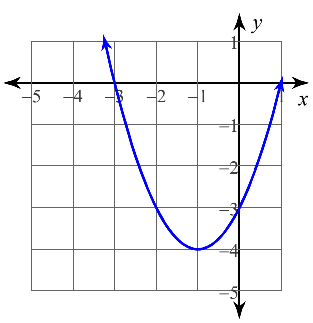

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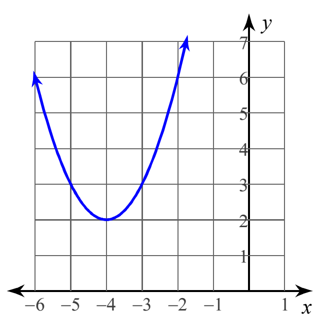

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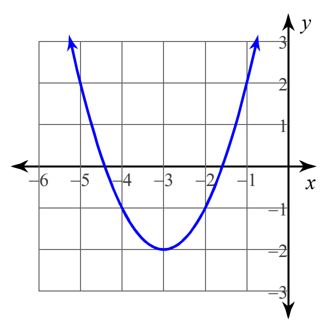

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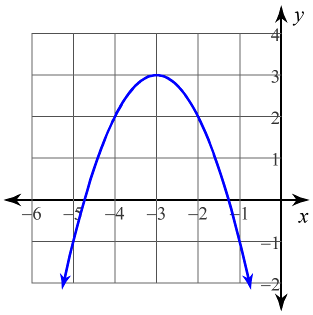

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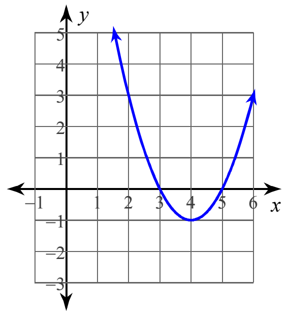

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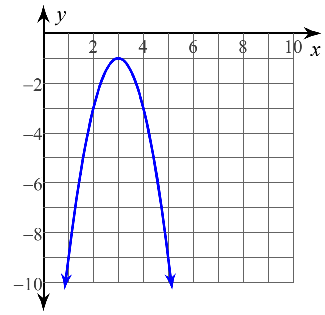

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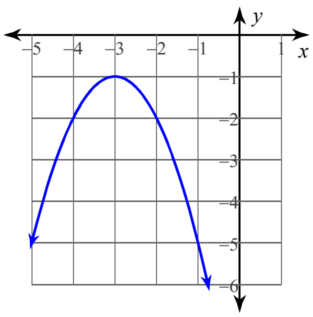

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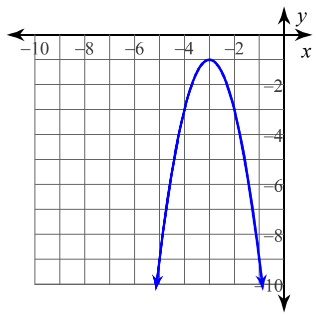

I can identify zeros of polynomial functions

I can show end bahavior of polynomial functions

QUESTION	**ZEROS**	**END BEHAVIOR**
1) $(5x-7)(x-10)$		
2) $(5x-9)(x+8)$		
3) $-6(x-9)(x+5)$		
4) $3(x+10)(x-4)$		
5) $3x(x+3)$		
6) $(x-9)^2$		
7) $(7x-8)(x-2)$		
8) $5x(x-10)$		
9) $(2x+3)(x+9)$		
10) $(x-10)(x+10)$		
11) $4(2x-9)(x+1)$		
12) $-(x-8)(x-4)$		
13) $(x-3)(x-7)$		
14) $(3x+8)(x-4)$		
15) $-x(2x-5)$		
16) $2(x-7)(x-9)$		
17) $5(x+2)(x+7)$		
18) $6(4x-5)(x+4)$		
19) $-4(x+8)^2$		
20) $4(2x-3)(x-8)$		

I can identify zeros of polynomial functions Solutions

I can show end behavior of polynomial functions Solutions

QUESTION	ZEROS	END BEHAVIOR
1) (5x-7)(x-10)	7/5, 10	As x→-∞,y→∞; As x→∞,y→∞
2) (5x-9)(x+8)	9/5, -8	As x→-∞,y→∞; As x→∞,y→∞
3) -6(x-9)(x+5)	9, -5	As x→-∞,y→-∞; As x→∞,y→-∞
4) 3(x+10)(x-4)	-10, 4	As x→-∞,y→∞; As x→∞,y→∞
5) 3x(x+3)	0, -3	As x→-∞,y→∞; As x→∞,y→∞
6) $(x-9)^2$	9	As x→-∞,y→∞; As x→∞,y→∞
7) (7x-8)(x-2)	8/7, 2	As x→-∞,y→∞; As x→∞,y→∞
8) 5x(x-10)	0, 10	As x→-∞,y→∞; As x→∞,y→∞
9) (2x+3)(x+9)	-3/2, -9	As x→-∞,y→∞; As x→∞,y→∞
10) (x-10)(x+10)	-10, 10	As x→-∞,y→∞; As x→∞,y→∞
11) 4(2x-9)(x+1)	9/2, -1	As x→-∞,y→∞; As x→∞,y→∞
12) –(x-8)(x-4)	8, 4	As x→-∞,y→-∞; As x→∞,y→-∞
13) (x-3)(x-7)	3, 7	As x→-∞,y→∞; As x→∞,y→∞
14) (3x+8)(x-4)	-8/3, 4	As x→-∞,y→∞; As x→∞,y→∞
15) -x(2x-5)	0, 5/2	As x→-∞,y→-∞; As x→∞,y→-∞
16) 2(x-7)(x-9)	7, 9	As x→-∞,y→∞; As x→∞,y→∞
17) 5(x+2)(x+7)	-2, -7	As x→-∞,y→∞; As x→∞,y→∞
18) 6(4x-5)(x+4)	5/4, -4	As x→-∞,y→∞; As x→∞,y→∞
19) $-4(x+8)^2$	-8	As x→-∞,y→-∞; As x→∞,y→-∞
20) 4(2x-3)(x-8)	3/2, 8	As x→-∞,y→∞; As x→∞,y→∞

Student ________________________

Teacher ________________________

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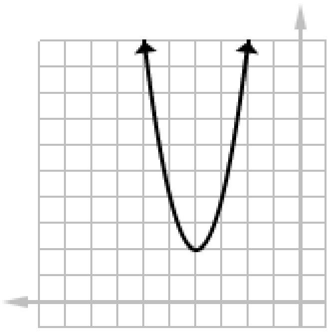
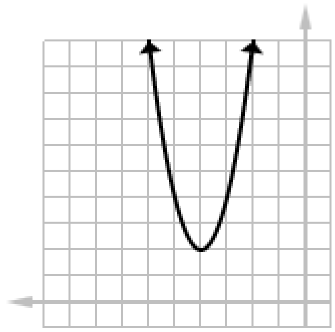
Are You Ready? I can identify the key features of quadratic functions.

1. Identify the vertex.



Vertex: _________

2. Identify increasing/decreasing intervals.

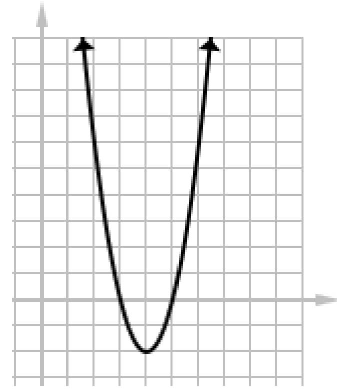


Use "infinity" as needed.

Increasing: ________

Decreasing: ________

3. Identify positive/negative intervals.

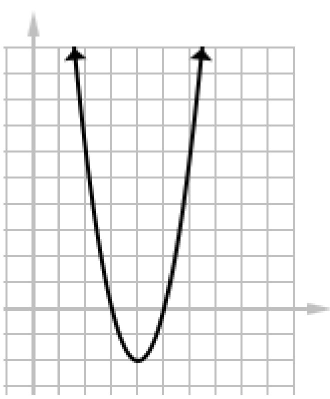


Use "infinity" as needed. Write multiple intervals in a comma-separated list.

Positive: ______

Negative: ______

4. Identify the end behavior.



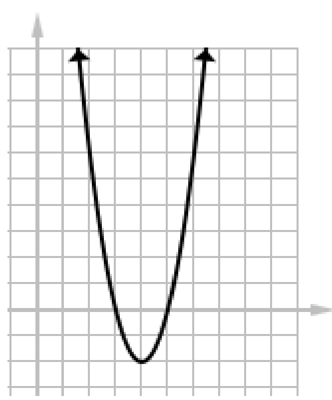
Use "infinity" as needed.

End Behavior:

As x → ∞, y → _____

As x → -∞, y → _____

5. Identify the x-intercepts.

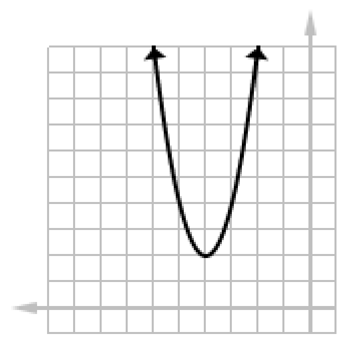


Write your answers as points.

Smaller value: ______

Larger value: ______

6. Identify if the function has a relative maximum or minimum.



Does the function have a relative maximum or minimum? ______ (max / min)

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Are You Ready? I can sketch functions that show key features.

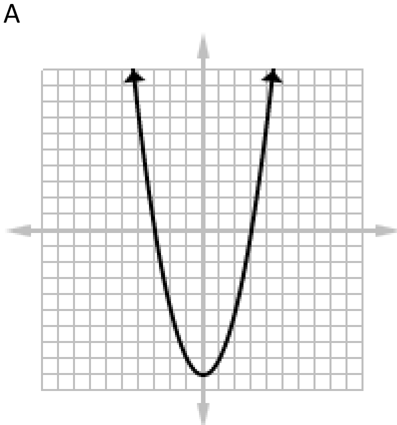
1. Order the functions by vertex, from 1 = highest to 4 = lowest.

___ $y = (x-1)^2 - 3$ ___ $y = \frac{1}{2}(x+3)^2 - 1$

___ $y = 2(x+1)^2 + 5$ ___ $y = -x^2 + 2x + 1$

2. Match the functions with their positive/negative intervals.

A



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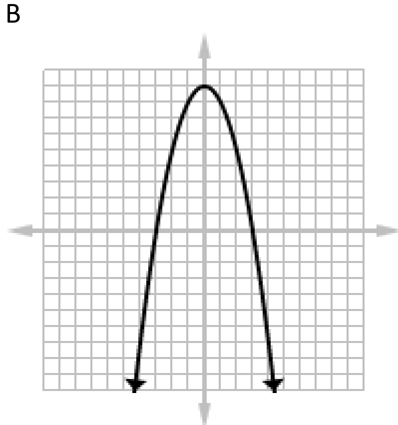

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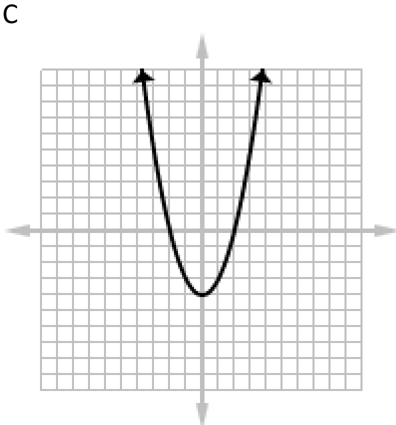

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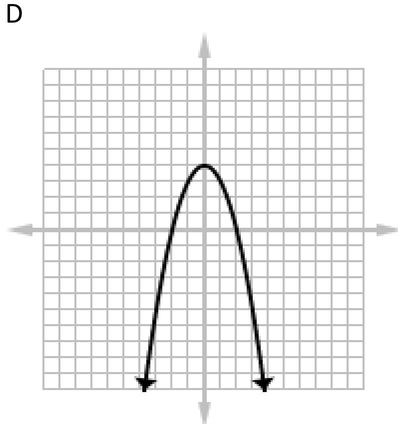


______ Positive on (02,2)

______ Negative on (-2,2)

______ Positive on (-∞,-3), (3,∞)

______ Negative on (-∞,-3),(3,∞)

3. Order the functions by vertex, from 1 = left to 4 = right.

___ $y = x^2 + 6x + 2$ ___ $y = x^2 - 8x - 7$

___ $y = -3(x-3)^2 + 3$ ___ $y = (x+2)^2 + 9$

4. Which functions have x-intercepts of (-4,0) and (2, 0)? Choose all that apply.

____ $y = x^2 - 2x - 8$ ____ $y = x^2 + 2x - 8$

____ $y = (x-1)^2 - 9$ ____ $y = (x+1)^2 - 9$

5. Match the functions with their increasing/decreasing interval.

____ $y = x^2 - 4x + 7$ a. $(-4,\infty)$

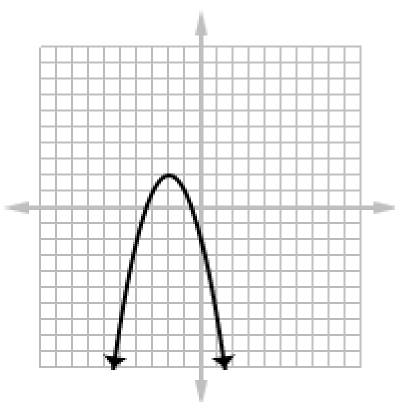
____ $y = x^2 + 6x + 4$ b. $(-\infty,-3)$

____ $y = x^2 - 9$ c. $(2,\infty)$

____ $y = x^2 + 8x + 4$ d. $(-\infty,0)$

6. Which functions have the following end behavior? Choose all that apply.

As $x \to -\infty$, $y \to \infty$
As $x \to \infty$, $y \to \infty$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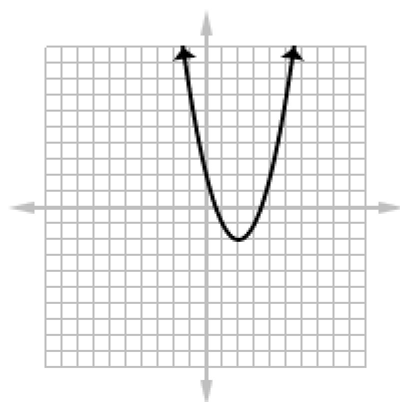
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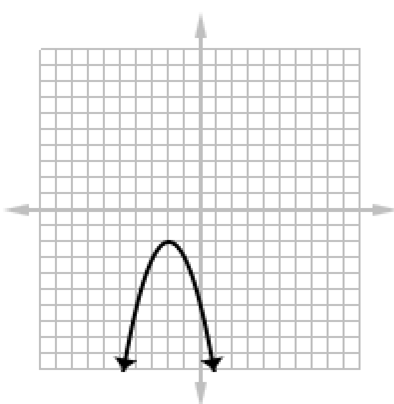
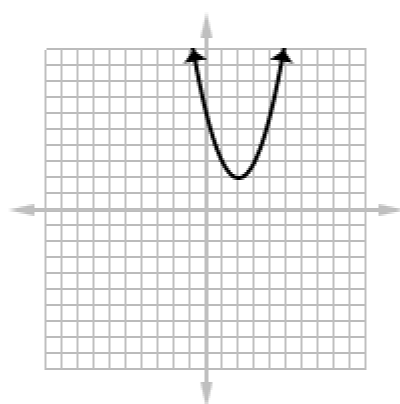

_____


_____

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Are You Ready? I can identify zeros of polynomial functions

1. Identify the zeros. $3\left(x+5\right)\left(x-4\right)$ Smaller zero: ______ Larger zero: ______

2. Identify the zeros. $-5\left(2x+5\right)\left(x+1\right)$ Smaller zero: ______ Larger zero: ______

3. Identify the zeros. $\left(x-3\right)\left(2x+1\right)$ Smaller zero: ______ Larger zero: ______

4. Identify the zeros. $\left(x+4\right)\left(x+3\right)$ Smaller zero: ______ Larger zero: ______

5. Identify the zeros. $x\left(x-7\right)$ Smaller zero: ______ Larger zero: ______

6. Identify the zeros. $\frac{1}{2}\left(x-6\right)^2$ Smaller zero: ______ Larger zero: ______

Are You Ready? I can show end behavior of polynomial functions.

Directions: Write "infinity" as needed.

1. Determine the end behavior. $f\left(x\right)=6\left(3x+5\right)\left(x-4\right)$ As x → -∞, y → ______, As x → ∞, y → _______

2. Determine the end behavior. $f\left(x\right)=-\left(x+3\right)\left(x+2\right)$ As x → -∞, y → ______, As x → ∞, y → _______

3. Determine the end behavior. $f\left(x\right)=-\frac{2}{3}x\left(x+7\right)$ As x → -∞, y → ______, As x → ∞, y → _______

4. Determine the end behavior. $f\left(x\right)=\left(x-3\right)\left(x-6\right)$ As x → -∞, y → ______, As x → ∞, y → _______

5. Determine the end behavior. $f\left(x\right)=-\left(x-8\right)\left(x+1\right)$ As x → -∞, y → ______, As x → ∞, y → _______

6. Determine the end behavior. $f\left(x\right)=\left(x+2\right)\left(x+9\right)$ As x → -∞, y → ______, As x → ∞, y → _______

Student ______________________
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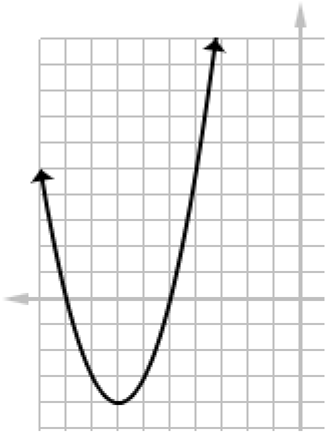
Alg2 U2 F-IF.4 v2 **Standard Assessment**

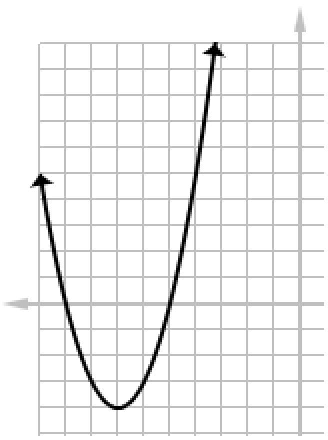


1. Does the function have a minimum or a maximum? Where does this occur?

The function has a __________. (min / max)

This occurs at __________. (write a point)

2. Explain your reasoning Question 1.



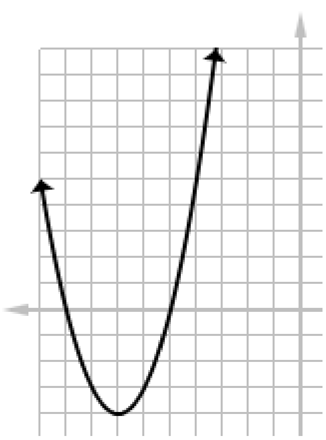
3. On which intervals is the function increasing/decreasing and is positive/negative?

Write "infinity" as needed. Use a comma-separated list of intervals where needed.

The function is increasing on the interval __________ and decreasing on the interval __________.

The function is positive on the interval __________ and negative on the interval __________.

4. Explain your reasoning for Question 3.



5. Identify the function's x-intercepts and end behavior.

The function's x-intercepts are __________ and __________. (write points, lowest first)

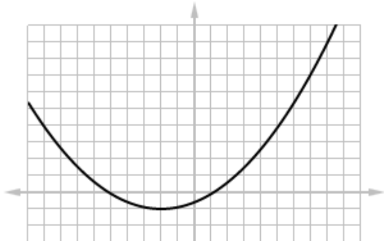
The function's end behavior is: (write "infinity" as needed)

As $x \to \infty$, $y \to$ __________.

As $x \to -\infty$, $y \to$ __________.

6. Explain your reasoning for Question 5.

A



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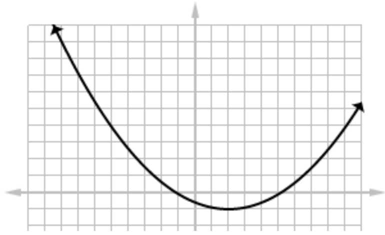

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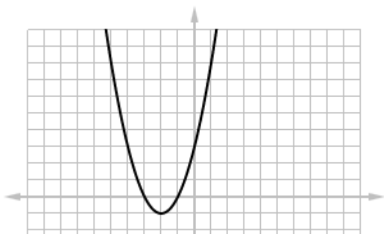

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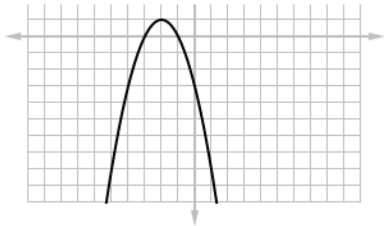
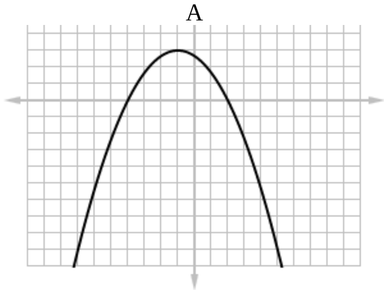


7. Which function has a vertex at (2,-1) and is positive on the interval (-∞, -1)?

8. Explain your reasoning for Question 7.

A



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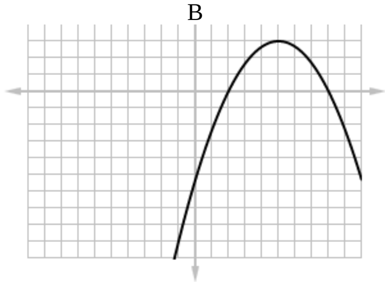

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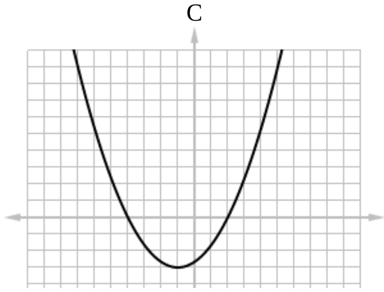

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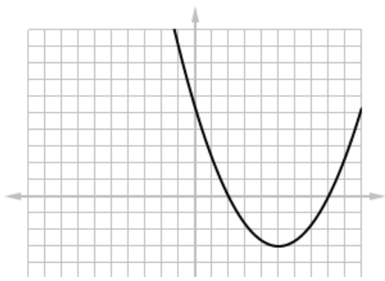
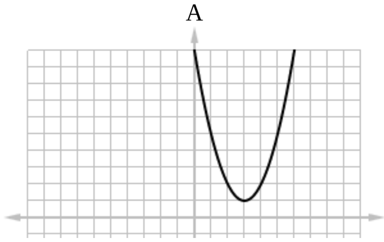


9. Which function has an x-intercept at (2,0) and is increasing on the interval (-1,∞)?

10. Explain your reasoning for Question 9.

A



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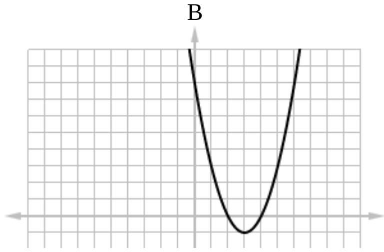

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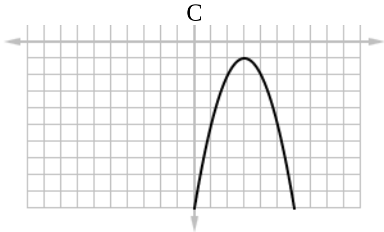

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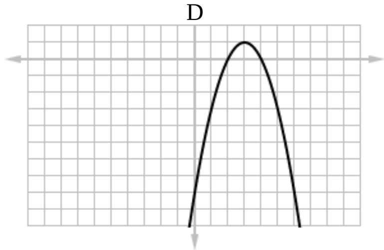

11. Which function has a vertex at (3, 1) and end behavior where, as x → -∞, y → ∞?

12. Explain your reasoning for Question 11.