

READY, SET, GO!

Name _____

Period _____

Date _____

READY

Topic: Standard form of quadratic equations

The standard form of a quadratic equation is defined as $y = ax^2 + bx + c$, ($a \neq 0$).

Identify **a**, **b**, and **c** in the following equations.

Example: Given $4x^2 + 7x - 6$, $a = 4$, $b = 7$, and $c = -6$

1. $y = 5x^2 + 3x + 6$

$a = \underline{5}$
 $b = \underline{3}$
 $c = \underline{6}$

2. $y = x^2 - 7x + 3$

$a = \underline{1}$
 $b = \underline{-7}$
 $c = \underline{3}$

3. $y = -2x^2 + 3x$

$a = \underline{-2}$
 $b = \underline{3}$
 $c = \underline{0}$

4. $y = 6x^2 - 5$

$a = \underline{6}$
 $b = \underline{0}$
 $c = \underline{-5}$

5. $y = -3x^2 + 4x$

$a = \underline{-3}$
 $b = \underline{4}$
 $c = \underline{0}$

6. $y = 8x^2 - 5x - 2$

$a = \underline{8}$
 $b = \underline{-5}$
 $c = \underline{-2}$

Multiply and write each product in the form $y = ax^2 + bx + c$. Then identify **a**, **b**, and **c**.

7. $y = x(x - 4)$

$y = x^2 - 4x$
 $a = \underline{1}$
 $b = \underline{-4}$
 $c = \underline{0}$

8. $y = (x - 1)(2x - 1)$

$y = 2x^2 - x - 2x + 1$
 $y = 2x^2 - 3x + 1$
 $a = \underline{2}$
 $b = \underline{-3}$
 $c = \underline{1}$

9. $y = (3x - 2)(3x + 2)$

$y = 9x^2 - 4$
 $a = \underline{9}$
 $b = \underline{0}$
 $c = \underline{-4}$

10. $y = (x + 6)(x + 6)$

$y = x^2 + 12x + 36$
 $a = \underline{1}$
 $b = \underline{12}$
 $c = \underline{36}$

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

$y = (x - 3)(x - 3)$
 $y = x^2 - 6x + 9$
 $a = \underline{1}$
 $b = \underline{-6}$
 $c = \underline{9}$

12. $y = -(x + 5)^2$

$y = -1(x + 5)(x + 5)$
 $y = -1(x^2 + 10x + 25)$
 $y = -x^2 - 10x - 25$
 $a = \underline{-1}$
 $b = \underline{-10}$
 $c = \underline{-25}$

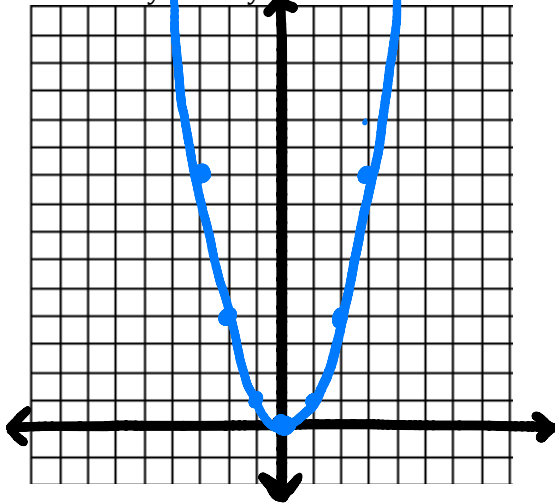
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SET

Topic: Graphing a standard $y=x^2$ parabola

13. Graph the equation $y = x^2$.

Include at least 3 accurate points on each side of the axis of symmetry.



a. State the vertex of the parabola.

$(0,0)$

b. Complete the table of values for $y = x^2$.

x	$f(x)$
-3	9
-2	4
-1	1
0	0
1	1
2	4
3	9

Topic: Writing the equation of a transformed parabola in vertex form.

Find a value for ω such that the graph will have the specified number of x-intercepts.

14. $y = x^2 + \omega$ $\omega < 0$
2 (x-intercepts)

15. $y = x^2 + \omega$ $\omega = 0$
1 (x-intercept)

16. $y = x^2 + \omega$ $\omega > 0$
no (x-intercepts)

17. $y = -x^2 + \omega$ $\omega > 0$
2 (x-intercepts)

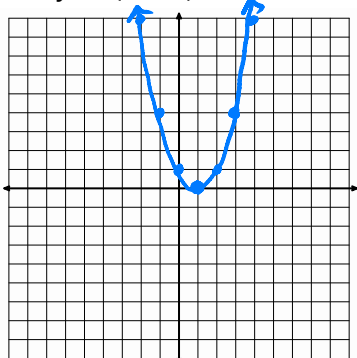
18. $y = -x^2 + \omega$ $\omega = 0$
1 (x-intercept)

19. $y = -x^2 + \omega$ $\omega < 0$
no (x-intercepts)

Graph the following equations. State the vertex.

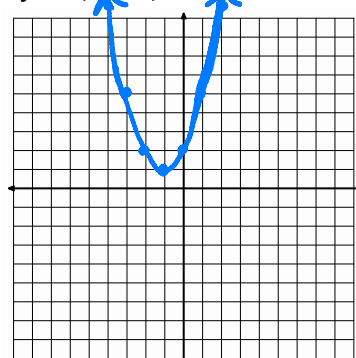
(Be accurate with your key points and shape!)

20. $y = (x - 1)^2$



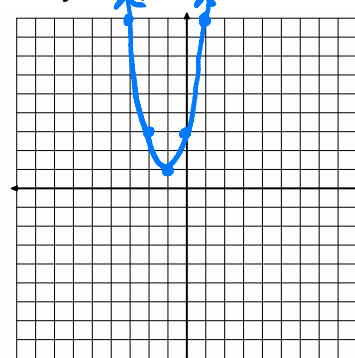
Vertex? $(1,0)$

21. $y = (x - 1)^2 + 1$



Vertex? $(1,1)$

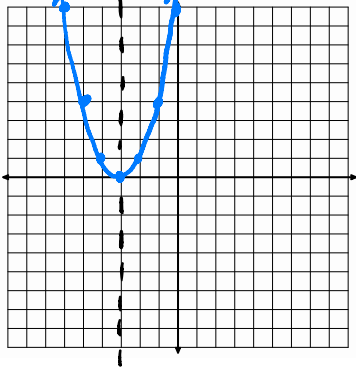
22. $y = 2(x - 1)^2 + 1$



Vertex? $(1,1)$

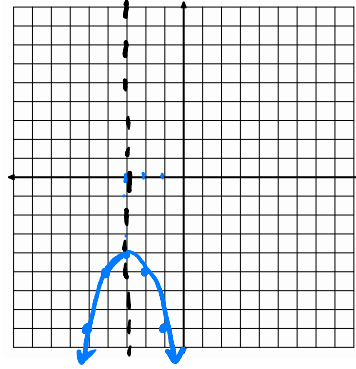
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23. $y = (x + 3)^2$



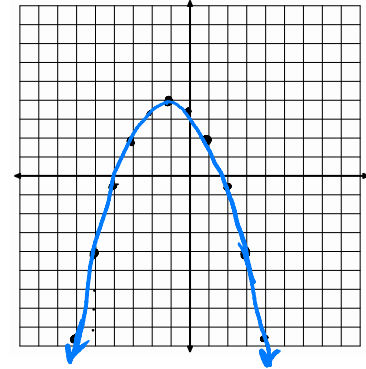
Vertex? $(-3, 0)$
a.o.s. $x = -3$

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



Vertex? $(-3, -4)$
a.o.s. $x = -3$

25. $y = -0.5(x + 1)^2 + 4$



Vertex? $(-1, 4)$
a.o.s. $x = -1$

GO

Topic: Features of Parabolas

Use the table to identify the vertex, the equation for the axis of symmetry (AoS), and state the number of x-intercept(s) the parabola will have, if any. State whether the vertex will be a *minimum* or a *maximum*.

26.

x	y
-4	10
-3	3
-2	-2
-1	-5
<u>0</u>	<u>-6</u>
1	-5
2	-2

- a. Vertex: $(0, -6)$
 b. AoS: $x = 0$
 c. x-int(s): 2
 d. MIN or MAX

27.

x	y
-2	49
-1	28
0	13
1	4
<u>2</u>	<u>1</u>
3	4
4	13

- a. Vertex: $(2, 1)$
 b. AoS: $x = 2$
 c. x-int(s): NONE
 d. MIN or MAX

28.

x	y
-7	-9
-6	3
<u>-5</u>	<u>7</u>
-4	3
-3	-9
-2	-29
-1	-57

- a. Vertex: $(-5, 7)$
 b. AoS: $x = -5$
 c. x-int(s): 2
 d. MIN or MAX

29.

x	y
-8	-9
<u>-7</u>	<u>-8</u>
-6	-9
-5	-12
-4	-17
-3	-24
-2	-33

- a. Vertex: $(-7, -8)$
 b. AoS: $x = -7$
 c. x-int(s): None
 d. MIN or MAX

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