

Home: 22Date: 2/3

p278 #13-25 odd, 27-32 all, 33-40 all

<http://www.mathvizza.com>Directions: Please expand the following. **Bell Work**

1. $(2x-9)(3x+8)$

$$6x^2 + 16x - 27x - 72$$

2. $(3x-9)^2$

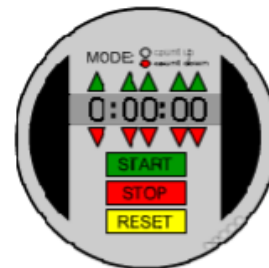
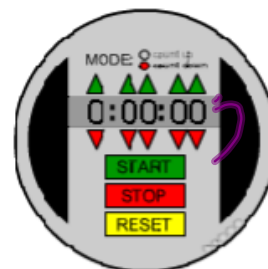
$$9x^2 - 54x + 81$$

Directions: Please simplify the following.

$$-(3x+9)-(4x+9)+(5x+8)$$

$$-3x-9-4x-9+5x+8$$

$$\underline{-2x-10}$$



$$6x^2 - 11x - 72$$

Objectives

1. The students will write quadratic functions in standard form.
2. The students will determine if a function is a quadratic function.
3. The students will determine if the graph of quadratic function opens up or down.
4. The students will determine if the y-coordinate of the vertex of a function is a maximum or a minimum.

Vocabulary

quadratic function - a function of the form

$$f(x) = ax^2 + bx + c$$

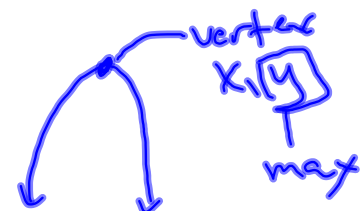
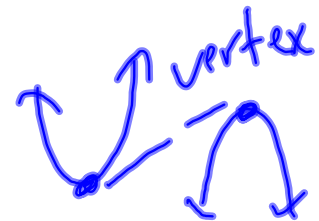
parabola - the graph of a quadratic function

vertex - the highest or lowest **point** on parabola

maximum - the largest **y** value of a function

minimum - the smallest **y** value of a function

highest exp.



Writing Quadratic Functions in Standard Form

Directions: Please write the following quadratic functions in standard form and identify a, b & c.

Example 1

$$\underline{a}x^2 + \underline{b}x + \underline{c}$$

$$a = \underline{3}$$

$$f(x) = 3(x-4)(x+1)$$

$$b = \underline{-9}$$

$$3(x^2 + x - 4x - 4)$$

$$c = \underline{-12}$$

$$3(x^2 - 3x - 4)$$

$$3x^2 - 9x - 12$$

Example 2

$$b(x) = -(x-5)(2x+1)$$

$$a = \underline{-2}$$

$$(-x+5)(2x+1)$$

$$b = \underline{9}$$

$$-2x^2 - x + 10x + 5$$

$$c = \underline{5}$$

$$-2x^2 + 9x + 5$$

Flash Cards

Determining if a Function is Quadratic

Directions: Please determine which of the following functions is quadratic.

1. $m(x) = \frac{2x^2 - 4x + 1}{3x + 2}$ (no)

2. $m(r) = 2 + r$ (no)
Linear

3. $b(z) = 2 - 4z^2$ (yes)

4. $p(x) = x^2(x - 4)$
 $= x^3 - 4x^2$

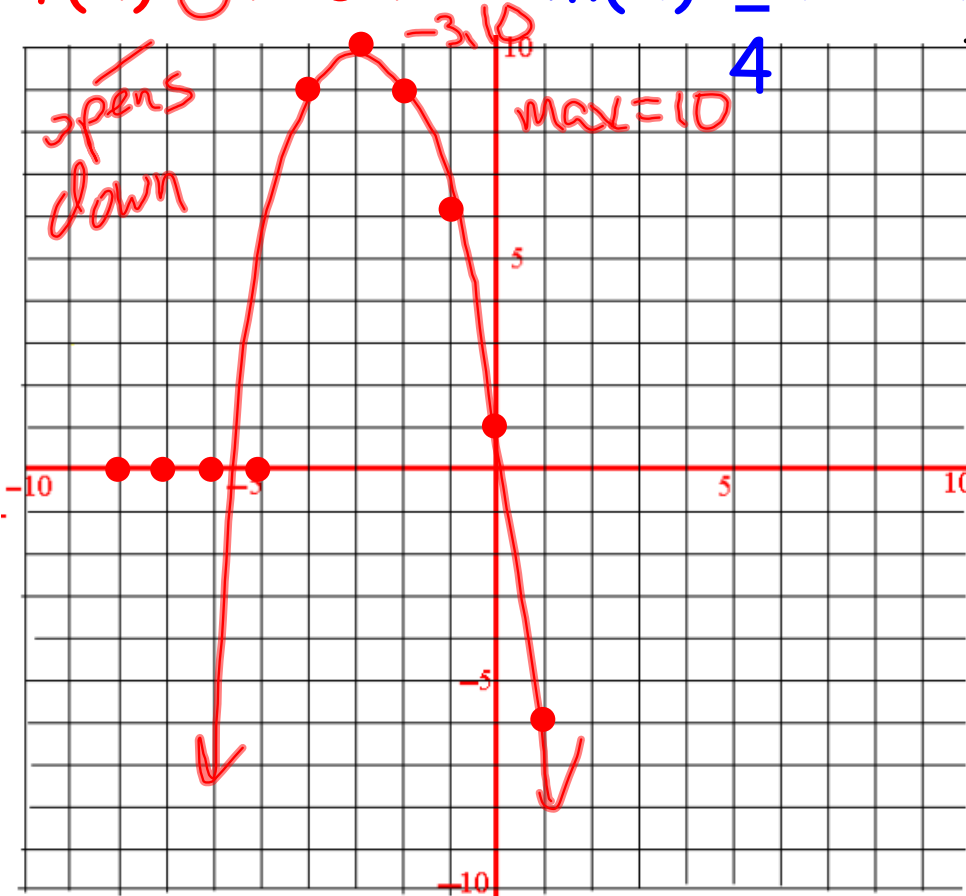
5. $h(x) = -2x - \frac{2}{3}x^2$ (yes)

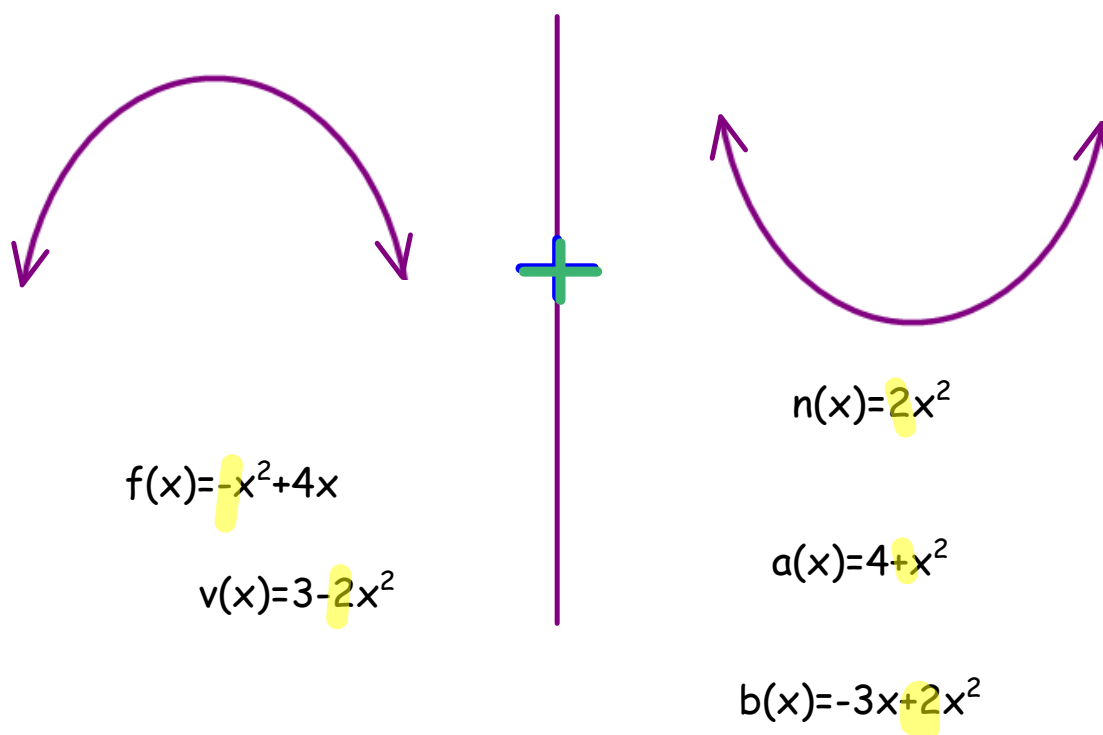
(no)
c

$f(x) = -x^2 - 6x + 1$ $m(x) = 1x^2 + 2x$

Excel/Wiki Version

x	f(x)	m(x)
1	-6	
0	1	
-1	8	
-2	5	
-3	10	
-4	9	
-5		
-6		
-7		
-8		
-9		



Vertex-Max/Min

Practice and Apply

Show that each function is a quadratic function by writing it in the form $f(x) = ax^2 + bx + c$ and identifying a , b , and c .

13. $f(x) = (x - 3)(x + 8)$

15. $g(x) = (4 - x)(7 + x)$

17. $g(x) = -(x - 2)(x + 6)$

19. $f(x) = 3(x - 2)(x + 1)$

21. $h(x) = x(x - 3)$

23. $g(x) = (2x + 3)(4 - x)$

25. $h(x) = (x - 4)(x + 4)$

14. $k(x) = (x + 3)(x - 5)$

16. $g(x) = (10 - x)(x + 4)$

18. $f(x) = -(x + 3)(x - 9)$

20. $h(x) = 2(x + 1)(3x - 4)$

22. $f(x) = 2x(x + 5)$

24. $f(x) = (4x + 1)(4 - x)$

26. $f(x) = (x - 6)(x + 6)$

Identify whether each function is a quadratic function. Use a graph to check your answers.

27. $f(x) = 3 - x^2$

29. $f(t) = \frac{1}{4}t^2 + \frac{1}{2}t - \frac{2}{3}$

31. $g(t) = t^2 - t^2(t + 7)$

28. $g(s) = 3 - s$

30. $h(x) = \frac{3x^2 + 4x + 1}{x + 1}$

32. $h(x) = |x^2 + 5x - 2|$

State whether the parabola opens up or down and whether it

State whether the parabola opens up or down and whether the y -coordinate of the vertex is the minimum value or the maximum value of the function.

33. $f(x) = -2x^2 - 2x$

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

35. $g(x) = -(3x^2 - x + 3)$

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

37. $h(x) = 1 - 9x - x^2$

38. $g(x) = -(x^2 + x - 12)$

39. $g(x) = 3(x + 8)(-x + 9)$

40. $h(x) = -(4x + 1)(x + 4)$

Exploration_quadratics.xls