

Module 7a: Quadratics REVIEW!

Name: _____

1. Re-express each in $ax + b$ form.

a. $(7x - 6) + (2x - 2) = 9x - 8$

c. $(10 - 12x) + (8x + 16) =$
 $-4x + 26$

b. $(4x + 5) - (7x + 1) = -3x + 4$

d. $(9x + 13) - (4 - 12x) = 21x + 9$

2. Jeremy wants to put a pool in his backyard. He wants the length of the pool to be 5 feet longer than the width, x . Label the picture to help set up the problem.

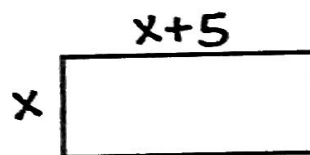
a. Write a function for the area of the pool.

$A(x) = x(x + 5)$

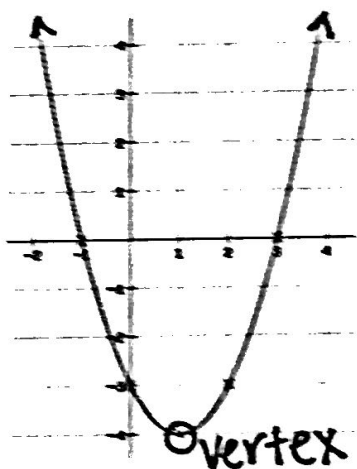
$A(x) = x^2 + 5x$

b. Write a function for the perimeter of the pool.

$P(x) = 4x + 10$



3. Identify the key features of the function. Approximate if needed.



POINT a. Vertex $(1, -4)$ Max or Min?

POINTS b. X-intercepts $(-1, 0)$ and $(3, 0)$

POINT c. Y-intercept $(0, -3)$

d. Domain $(-\infty, \infty)$

e. Range $y \geq -4$
OR $[-4, \infty)$

4. Write an equivalent expression in $ax^2 + bx + c$ form

a. $(2x - 6)(3x + 5)$

$6x^2 + 10x$
 $-18x - 30$

$6x^2 - 8x - 30$

c. $(5x - 1)(5x + 1)$

$25x^2 + 5x$
 $-5x - 1$

$25x^2 - 1$

b. $(x - 4)(x + 5)$

$x^2 + 5x$
 $-4x - 20$

$x^2 + x - 20$

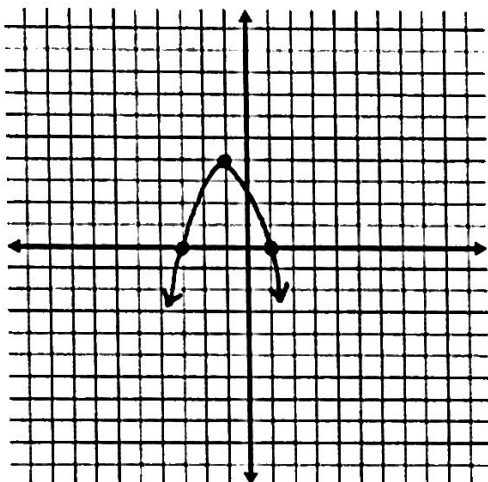
d. $(x - 4)(x - 3) + 6x - 10$

$x^2 - 3x$
 $-4x + 12$ ← combine!

$x^2 - 1x + 2$

5. Consider the function $f(x) = -(x+3)(x-1)$.

- a. Give the zero(s) for $f(x)$ $x = -3$ $x = 1$ and $(-3, 0)$ and $(1, 0)$
- b. Give the coordinates of the vertex for $f(x)$ Midpoint: -1 $(-1, 4)$
- c. Does this function have a maximum value or a minimum value? vertex
- d. On the axes below, sketch a graph of $f(x)$.



6. Which of the following tables is a quadratic function and how can you tell?

x	f(x)
0	12
1	8
2	2
3	1

No pattern

x	g(x)
0	3
1	6
2	12
3	24

exponential

x	h(x)
0	10
1	12
2	17
3	25

Quadratic!
second difference of $+3$

7. Evaluate: $f(9)$ for the function $f(x) = -3x^2 - x + 2$

$$-3(9)^2 - 9 + 2$$

$$-3(81) - 9 + 2$$

$$-243 - 9 + 2$$

$$-252 + 2 =$$

$$\boxed{-250}$$

$$\begin{array}{r} 81 \\ 81 \\ 81 \\ \hline 243 \\ + 9 \\ \hline 252 \end{array}$$