

Algebra 2 Unit 2 TEST Review: QUADRATICS

Directions: FACTOR (HINT: expression must be written in standard form: $y = ax^2 + bx + c$)

1) $3x^2 - 20 + 11x$

2) $x^2 + 9x - 36$

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

$(x-3)(x+12)$

3. Write this equation in vertex form by finding the vertex or completing the square: $f(x) = x^2 + 8x - 3$

Vertex form: $f(x) = a(x-h)^2 + k$

Vertex: (h, k)

Vertex form: $f(x) = (x+4)^2 - 19$

Vertex: $(-4, -19)$

For the problems below, make sure your answers are in the right format (point, equation of line, number, ...)

Find the information below then sketch the graph:

4. $f(x) = (x-1)^2 - 5$

Which way does it open? UP

Has a MAX or MIN?

Value of -5

Vertex: (1, -5)

Axis of Symmetry: $X=1$
(equation)

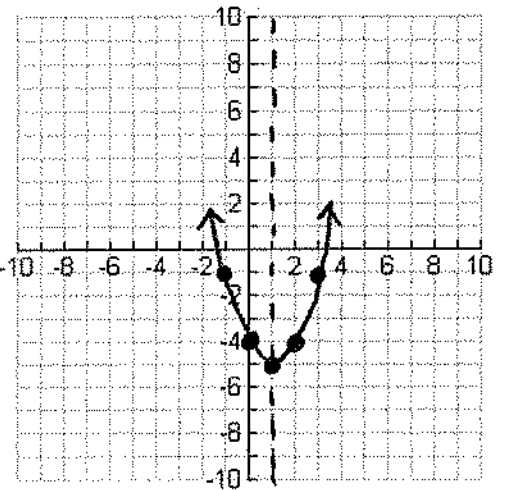
Domain(INT) $(-\infty, \infty)$

(SET) $\{x | x \in \mathbb{R}\}$

Range(INT) $[-5, \infty)$

(SET) $\{y | y \geq -5\}$

x	y
-1	
0	
1	-5
2	
3	



4b) Write the function in standard form: $f(x) = x^2 - 2x - 4$

↑
include

y-int: (0, -4)

5. $f(x) = x^2 + 6x + 5$

Which way does it open? up

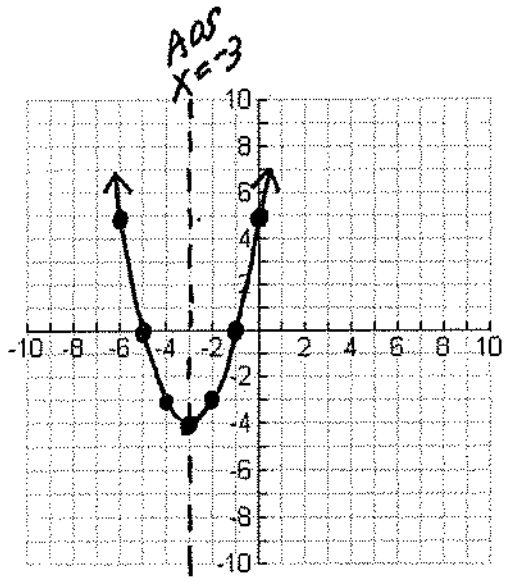
Has a MAX or MIN? MIN

Value of -4

Vertex: (-3, -4)

Axis of Symmetry: X = -3

X	Y
-5	4
-4	1
-3	-4
-2	-3
-1	4



Domain(INT) $(-\infty, \infty)$

(SET) $\{x | x \in \mathbb{R}\}$

Range(INT) $[-4, \infty)$

(SET) $\{y | y \geq -4\}$

y-int: (0, 5)

5b) Write the function in vertex form. Start by finding $x = \frac{-b}{2a}$: $f(x) = (x+3)^2 - 4$
vertex form
 $f(x) = x^2 + 6x + 5$

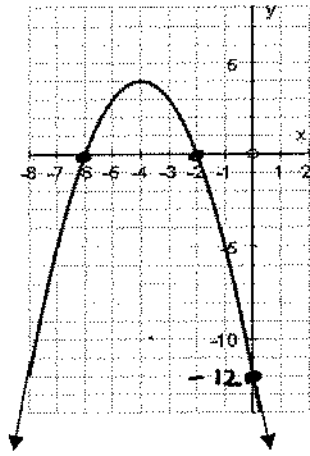
6. Here's a graph...tell me the info:

Which way does it open? DOWN Max Min value: 4

Has a MAX or MIN? MAX y-intercept: (0, -12)

Vertex: (-4, 4) x-intercepts: (-2, 0); (-6, 0)

Axis of Symmetry: X = -4 Given that $a = -1$, write the equation
 (equation) in vertex form: $y = -(x+4)^2 + 4$



Domain(INT) $(-\infty, \infty)$

(SET) $\{x | x \in \mathbb{R}\}$

Range(INT) $(-\infty, 4]$

(SET) $\{y | y \leq 4\}$

7. Factor each of the following.

a) $3x^3 + 9x^2 - 27x + 6$

b) $2x^2 + x - 6$

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

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

7) CONTINUED. Factor each of the following.

c) $5x^2 - 12x + 4$

d) $2x^2 - 4xy - 16y^2$

e) $81x^2 - 16$

$(5x-2)(x-2)$

f) $3x^2 - 7x - 6$

$2(x+2y)(x-4y)$

g) $x^2 + 4$

$(9x+4)(9x-4)$

h) $2x^3y^2 - 2xy^2$

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

Prime

$2xy^2(x+1)(x-1)$

8. Find the following information for the quadratic function $f(x) = 4x^2 + 8x - 5$.

Vertex is $(-1, -9)$

Min or Max? Value of -9

Domain(INT): $(-\infty, \infty)$

(SET): $\{x | x \in \mathbb{R}\}$

Range(INT): $[-9, \infty)$

(SET): $\{y | y \geq -9\}$

Directions: Fill in the blank for each expression in order to complete the square. USE: $\left(\frac{b}{2}\right)^2$

9) $x^2 + 4x + 4$

10) $x^2 + 2x + 1$

11) $x^2 - 8x + 16$

Directions:

Write each equation in vertex form by finding its vertex or completing the square.

12) $y = x^2 - 6x - 2$

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

Write the function in standard form.

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

V: $(3, -11)$
 $y = (x-3)^2 - 11$

V: $(2, -3)$
 $y = (x-2)^2 - 3$

$f(x) = 3x^2 + 6x - 1$