AChor/MBF3C **Name: _____**
Date: _____

Worksheet 4-9: Different Forms of Quadratic Relations

Each quadratic relation has three different ways to write its equation.

Vertex Form:	$y = a(x-h)^2 + k$ **vertex = (*h*, *k*)**	(vertex can be easily seen from the equation)
Standard Form:	$y = ax^2 + bx + c$ ***y*-intercept = *c***	(*y*-intercept can be easily seen from the equation)
Intercept Form:	$y = a(x-r)(x-s)$ ***x*-intercepts = *r* and *s***	(*x*-intercepts can be easily seen from the equation)

1. Each relation is in vertex form. Write each relation in standard form. (Hint: Expand)

(a) $y = -2(x-7)^2$

(b) $y = 3(x-5)^2 - 8$

2. Each relation is in vertex form. Write each relation in standard form, and in intercept form.

(a) $y = (x-3)^2 - 36$

(b) $y = -4(x-5)^2 + 100$

Assigned Work: WS 4-9; p. 245 #4, #6-10; p. 271 #4, #6, #7 (c to e)

3. The *x*-intercepts of a quadratic relation are also called the "zeros" of a quadratic relation. Find the zeros of each quadratic relation.

(a) $y = -3(x-7)(x+5)$

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

(c) $y = x^2 + 10x + 21$

(d) $y = 3x^2 - 24x + 48$

(e) $y = 4x^2 - 64$

(f) $y = x^2 + 3x + 25$

4. Which relation has more than one zero, only one zero, and no zero at all? Explain.

(a) $y = -5(x+8)^2$ (b) $y = 3(x-7)^2 + 4$ (c) $y = -(x+6)^2 + 5$

Answers: **1.** (a) $y = -2x^2 + 28x - 98$, (b) $y = 3x^2 - 30x + 67$;
2. (a) $y = x^2 - 6x - 27$, $y = (x-9)(x+3)$, (b) $y = -4x^2 + 40x$, $y = -4x(x-10)$;
3. (a) 7 and –5, (b) 0 and 8, (c) –3 and –7, (d) 4, (e) –4 and 4, (f) none;
4. (a) one zero, (b) no zero, (c) two zeros