

Reflective Portfolio
Unit #5: Quadratics

DIRECTIONS: Print and complete!
Hand it in inside your 2 pocket folder
along with previous units!!

Section #1: Vocabulary (words and/or diagrams)

Define each:

Roots	Focus
Identity	Directrix
Maximum	Vertex (turning point)
Minimum	Locus

Section #2: Formulas/Equations/Rules

Standard form of quadratic equation	Quadratic formula
Vertex form of quadratic equation	Center-radius form for equation of a circle
Combination of standard and vertex form $(x - h)^2 = 4p(y - k)$	Square Root Property
Distance formula	Perfect square trinomial identities

Section #3: Key methods and concepts

- **Types of factoring (GCF, DOPS, Trinomials including with a>1, Factor by Grouping)**

1) $3x^3 - 24x$ 2) $81 - 16x^4$ 3) $5x^2 - 17x + 6$ 4) $2x^3 - 3x^2 - 6x + 9$

- **Show the process for changing standard form to center-radius form of a circle:**

5) $y^2 + 2x + x^2 - 24y + 120 = 0$

6) Solve algebraically, $0 < x^2 + 2x - 8$ and graph the set on a number line and write the solution in set builder notation

7) Five ways to solve a quadratic equation: (#B,C,D-put in simplest radical form)

a. Solve by factoring: $3x^2 - 24 = 14x$

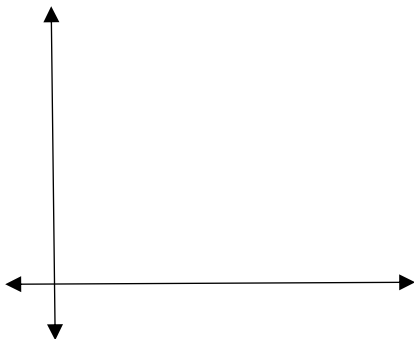
b. Solve by using quadratic formula: $2x^2 + 39 = 18x$

c. Solve by completing the square: $4x^2 + 8x - 1 = 0$

d. Solve by using square root property $4(x+1)^2 - 8 = 0$

e. Solve by graphing: Please show a sketch, window and labeled axes.

An object is launched at 19.6 meters per second (m/s) from a 58.8-meter tall platform. The equation for the object's height s at time t seconds after launch is $s(t) = -4.9t^2 + 19.6t + 58.8$, where s is in meters. When does the object strike the ground?



8) Put the equation into VERTEX FORM:

9) $y = -4x^2 - 16x + 5$

Vertex = _____

9) Determine the equation of a parabola given the focus and directrix: $y = 1$ Focus (3,5)

<p>Method 1: $y - \text{directrix} = \sqrt{(x - x_{\text{focus}})^2 + (y - y_{\text{focus}})^2}$</p>	<p>Method 2: $(x - h)^2 = 4p(y - k)$ where p = distance from vertex to focus. If parabola facing up, p is "+", facing down, p is "-"</p>
<p>a) Write equation in standard form.</p>	<p>b) Write equation in vertex form.</p>

Answers: 1) $3x(x^2 - 8)$ 2) $(9 + 4x^2)(3 + 2x)(3 - 2x)$ 3) $(5x - 2)(x - 3)$ 4) $(2x - 3)(x^2 - 3)$ 5) $(x + 1)^2 + (y - 12)^2 = 25$ 6) $\{x < -4 \text{ or } x > 2\}$ 7) a) $x = -\frac{4}{3}$, 6 b) $\frac{9}{2} \pm \frac{\sqrt{3}}{2}$ c) $-1 \pm \frac{\sqrt{5}}{2}$ d) $-1 \pm \sqrt{2}$ e) 6 secs 8) $(-2, 21)$ $y = -4(x + 2)^2 + 21$ 9) a) $y = \frac{1}{8}x^2 - \frac{3}{4}x + \frac{33}{8}$ b) $y = \frac{1}{8}(x - 3)^2 + 3$