

Optional Review Worksheet

Math 518 Review for Quadratic Quiz:

Name: Key

A) Are the following functions quadratic? **If so**, tell what a, b, and c are, and tell if it opens up or down.

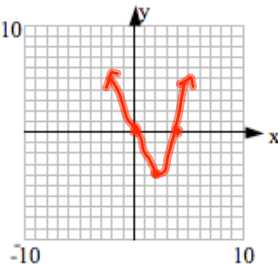
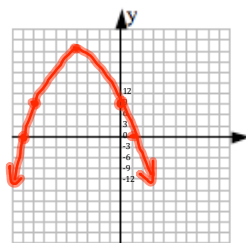
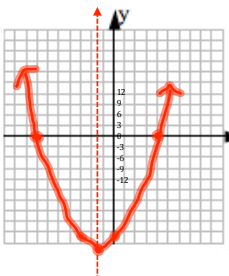
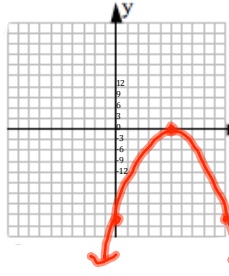
1) $f(x) = 3x^2 - 5x + 2$ Quadratic? <u>yes</u> a: <u>3</u> b: <u>-5</u> c: <u>2</u> Up or Down? <u>Up</u>	2) $g(x) = 4x - 3 + 2x$ Quadratic? <u>No</u> a: _____ b: _____ c: _____ Up or Down? _____	3) $h(x) = -x^2 + 2x$ Quadratic? <u>yes</u> a: <u>-1</u> b: <u>2</u> c: <u>0</u> Up or Down? <u>Down</u>
4) $a(x) = 2x^3 - 4x + 2$ Quadratic? <u>No</u> a: _____ b: _____ c: _____ Up or Down? _____	5) $b(x) = -3x + x^2 - 4$ Quadratic? <u>yes</u> a: <u>1</u> b: <u>-3</u> c: <u>-4</u> Up or Down? <u>UP</u>	6) $c(x) = 7 + 2x^2$ Quadratic? <u>yes</u> a: <u>2</u> b: <u>0</u> c: <u>7</u> Up or Down? <u>up</u>

B) Solve the following equations for X (don't forget to show ALL steps)

1) $x^2 = 81$ $x = \pm 9$	2) $x^2 = 90$ $x \approx \pm 9.49$	3) $\frac{1}{2}x^2 = 20$ $\sqrt{x^2} = \sqrt{40}$ $x \approx \pm 6.32$
4) $2x^2 + 7 = 79$ $\frac{2x^2}{2} = \frac{72}{2}$ $\sqrt{x^2} = \sqrt{36}$ $x = \pm 6$	5) $(x+3)^2 = 49$ $x+3 = \pm 7$ $-3 \quad -3$ $x = 4 \text{ or } -10$	6) $(2x-1)^2 = 25$ $2x-1 = \pm 5$ $+1 \quad +1$ $2x = 6 \text{ or } 2x = -4$ $x = 3 \text{ or } -2$
7) $3(x-4)^2 = 60$ $\sqrt{(x-4)^2} = \sqrt{20}$ $x-4 \approx \pm 4.47$ $+4 \quad +4$ $x \approx 8.47 \text{ or } -0.47$	8) $5(x^2 - 4) = 200$ $\frac{5}{5} \quad \frac{5}{5}$ $x^2 - 4 = 40$ $+4 \quad +4$ $\sqrt{x^2} = \sqrt{44}$ $x \approx \pm 6.63$	9) $\frac{1}{3}(2x-5)^2 = 18$ $\sqrt{(2x-5)^2} = \sqrt{54}$ $2x-5 \approx \pm 7.35$ $+5 \quad +5$ $2x \approx 12.35 \text{ or } 2x \approx -2.35$ $x \approx 6.18 \text{ or } -1.18$

C) Given the following quadratic equations:

Identify and Graph the Y-INTERCEPT, ROOTS, AXIS of SYMMETRY, and VERTEX

<p>1) $f(x) = x^2 - 4x + 0 = x(x-4)$</p> <p>y - intercept: (<u>0</u> , <u>0</u>)</p> <p>roots: (<u>0</u> , <u>0</u>) (<u>4</u> , <u>0</u>)</p> <p>Axis of Symmetry: x = <u>2</u></p> <p>Vertex: (<u>2</u> , <u>-4</u>)</p> 	<p>2) $g(x) = -x^2 - 8x + 9 = -(x^2 + 8x - 9) = -(x+9)(x-1)$</p> <p>y - intercept: (<u>0</u> , <u>9</u>)</p> <p>roots: (<u>-9</u> , <u>0</u>) (<u>1</u> , <u>0</u>)</p> <p>Axis of Symmetry: x = <u>-4</u></p> <p>Vertex: (<u>-4</u> , <u>25</u>)</p> 
<p>3) $m(x) = x^2 + 3x - 28 = (x+7)(x-4)$</p> <p>y - intercept: (<u>0</u> , <u>-28</u>)</p> <p>roots: (<u>-7</u> , <u>0</u>) (<u>4</u> , <u>0</u>)</p> <p>Axis of Symmetry: x = $\frac{-7+4}{2} = -1.5$</p> <p>Vertex: (<u>-1.5</u> , <u>-30.25</u>)</p> <p>$y = (-1.5+7)(-1.5-4)$ $(5.5)(-5.5)$ $y = -30.25$</p> 	<p>4) $n(x) = -x^2 + 10x - 25 = -(x^2 - 10x + 25) = -(x-5)(x-5)$</p> <p>y - intercept: (<u>0</u> , <u>-25</u>)</p> <p>roots: (<u>5</u> , <u>0</u>) (<u>5</u> , <u>0</u>)</p> <p>Axis of Symmetry: x = $\frac{5+5}{2} = 5$</p> <p>Vertex: (<u>5</u> , <u>0</u>)</p> 

D) Use the Zero-Product Property to solve for x

<p>1) $(x-3)(x+7) = 0$</p> <p>$x = 3$ or 7</p>	<p>2) $(2x-8)(3x+1) = 0$</p> <p>$2x-8 = 0$ or $3x+1 = 0$</p> <p>$x = 4$ or $x = -1/3$</p>	<p>3) $2x(x+10) = 0$</p> <p>$x = 0$ or -10</p>
<p>4) $x^2 + 7x + 12 = 0$</p> <p>$(x+3)(x+4) = 0$</p> <p>$x = -3$ or -4</p>	<p>5) $x^2 + 3x - 40 = 0$</p> <p>$(x+8)(x-5) = 0$</p> <p>$x = -8$ or 5</p>	<p>6) $x^2 - 49 = 0$</p> <p>$(x-7)(x+7) = 0$</p> <p>$x = 7$ or -7</p>