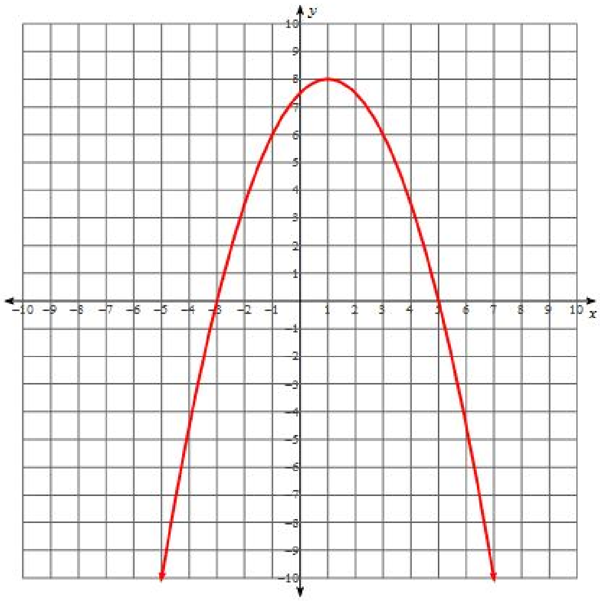
Math 11U Quadratics Practice Quiz Name:____________________

1. From the graph below, identify the y-intercept, zeros, vertex, axis of symmetry, and max/min value.



Y-int: $y = 7.5$

Zeros: $x = -3$

$\underline{x = 5}$ $(5, 0)$

vertex: $(1, 8)$

AoS: $x = 1$

Max: 8

2. State the equation of the above parabola in either vertex or zeros form.

Zeros:

$y = a(x - r)(x - 5)$

$8 = a(1 + 3)(1 - 5)$

$8 = a(4)(-4)$

$\frac{8}{-16} = \frac{a(-16)}{-16}$

$-\frac{1}{2} = a$

$y = -\frac{1}{2}(x + 3)(x - 5)$

Vertex:

$y = a(x - h)^2 + k$

$0 - 8 = a(5 - 1)^2 + 8 - 8$

$-8 = a(4)^2$

$-8 = a(16)$

$\frac{-8}{16} = a$

$-\frac{1}{2} = a$

$y = -\frac{1}{2}(x - 1)^2 + 8$

3. Expand to standard form:

a) $f(x) = -3(x + 4)(x - 7)$

$f(x) = -3(x^2 - 3x - 28)$

$f(x) = -3x^2 + 9x + 84$

b) $g(x) = 5(x + 3)^2 - 12$

$g(x) = 5(x + 3)(x + 3) - 12$

$g(x) = 5(x^2 + 6x + 9) - 12$

$g(x) = 5x^2 + 30x + 45 - 12$

$g(x) = 5x^2 + 30x + 33$

4. State the max/min value of each:

a) $f(x) = -5(x-3)^2 + 7$

Max of 7

b) $f(x) = \underbrace{4x^2 - 24x}_{4x} + 29$

$f(x) = 4x(x-6) + 29$

$x=0 \quad x=6$

$AoS = h = \frac{0+6}{2} = 3$

$k = f(3) = 4(3)^2 - 24(3) + 29$

$= 36 - 72 + 29 = -7$

$\therefore$ Min of -7.

5. Simplify, add or multiply the following radicals:

a) $3\sqrt{98}$

$= 3\sqrt{49}\sqrt{2}$

$= 3(7)\sqrt{2}$

$= 21\sqrt{2}$

b) $-4\sqrt{300x^5}$

$= -4\sqrt{100x^4}\sqrt{3x}$

$= -4(10x^2)\sqrt{3x}$

$= -40x^2\sqrt{3x}$

c) $2\sqrt{8} + 3\sqrt{50}$

$= 2\cancel{\sqrt{4}}^{2}\sqrt{2} + 3\cancel{\sqrt{25}}^{5}\sqrt{2}$

$= 4\sqrt{2} + 15\sqrt{2}$

$= 19\sqrt{2}$

d) $3\sqrt{6} \times 5\sqrt{10}$

$= 15\sqrt{60}$

$= 15\cancel{\sqrt{4}}^{2}\sqrt{15}$

$= 30\sqrt{15}$

e) $(2\sqrt{3} + 3\sqrt{6})(\sqrt{3} - 5\sqrt{6})$

$= 2\cancel{\sqrt{9}}^{3} - 10\sqrt{18} + 3\sqrt{18} - 15\cancel{\sqrt{36}}^{6}$

$= 6 - 7\sqrt{18} - 90$

$= -84 - 7\cancel{\sqrt{9}}^{3}\sqrt{2}$

$= -84 - 21\sqrt{2}$

More practice

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