

Quadratic Functions: Quiz Review

1. Write a rule for a quadratic function with a parabolic graph that has x-intercepts (2, 0) and (-6, 0) and maximum point (-2, 4). Leave in the form $f(x) = a(x - m)(x - n)$.

$$f(x) = a(x - 2)(x + 6)$$

$$4 = a(-2 - 2)(-2 + 6)$$

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

$$4 = \frac{-16a}{-16} \quad \rightarrow \quad a = -0.25$$

$$f(x) = -0.25(x - 2)(x + 6)$$

$(-2, 4)$
 x $f(x)$

2. Write each product in equivalent $ax^2 + bx + c$ form.

a.) $(x + 3)(x - 5)$

$$x^2 - 2x - 15$$

b.) $(3x + 5)(x + 2)$

$$3x^2 + 6x + 5x + 10$$

$$3x^2 + 11x + 10$$

c.) $(x - 5)^2$

$$x^2 - 10x + 25$$

d.) $(x + 10)(x - 10)$

$$x^2 - 100$$

3. Find an equivalent factored form for each quadratic expression, if possible. If not possible, state "not possible."

a.) $x^2 + 6x + 8$ $(x + 4)(x + 2)$

b.) $x^2 - 49$ $(x - 7)(x + 7)$

c.) $x^2 + 10x - 24$ $(x + 12)(x - 2)$

d.) $36 - 12x + x^2$ or $x^2 - 12x + 36$
 $(x - 6)^2$

e.) $16 - 25x^2$

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

f.) $\frac{2x^2}{2} - \frac{12x}{2} - \frac{14}{2}$

$$x^2 - 6x - 7 = (x - 7)(x + 1)$$

g.) $33x^2 - 6x$ $3x(11x - 2)$

4. Solve each quadratic equation, if possible. Use factoring at least one and the quadratic formula $\left(x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}\right)$ at least once. Show all work. If you cannot solve, state "no real solution."

a.) $x^2 - 4x + 3 = 0$

$$(x-3)(x-1) = 0$$

$$x = 3, 1$$

b.) $14 + 4x^2 = 30$

$$4x^2 = 16$$

$$x^2 = 4$$

$$x = \pm 2$$

c.) $x^2 - 7x + 2 = 20$

$$x^2 - 7x - 18 = 0$$

$$(x-9)(x+2) = 0$$

$$x = 9, -2$$

d.) $2x^2 + 25x + 33 = 0$

Quad Formula!

$$A = 2$$

$$B = 25$$

$$C = 33$$

e.) $9x^2 = 12x$

$$9x^2 - 12x = 0$$

$$3x(3x-4) = 0$$

$$x = 0$$

$$3x - 4 = 0$$

$$3x = 4$$

$$x = 4/3$$

$$\frac{-25 \pm \sqrt{25^2 - 4(2)(33)}}{2(2)}$$

$$\frac{-25}{4} \pm \frac{19}{4}$$

$$x = -1.5, 11$$