

Quad Equations Review

Math 20-2

Name: _____

Quadratic Equations

- If you solve by graphing, you need to include your sketch and write the equation(s) that you graphed.
- If you solve with the quadratic formula, you need to express your answer(s) as radicals in

lowest terms. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

1. Solve both equations; solve at least one by factoring:

a) $3x^2 - 10x - 8 = 0$

b) $x^2 = 3x + 10$

a) $3x^2 - 10x - 8 = 0$

$3x^2 - 12x + 2x - 8 = 0$ $\begin{array}{r} -24 \\ -12 \times +2 \\ -10 \end{array}$

$3x(x-4) + 2(x-4) = 0$

$(x-4)(3x+2) = 0$

$x-4=0$ $3x+2=0$

$x=4$ $3x=-2$

$x=-\frac{2}{3}$

b) $x^2 = 3x + 10$

$x^2 - 3x - 10 = 0$ $\begin{array}{r} -10 \\ -5 \times +2 \\ -3 \end{array}$

$x^2 - 5x + 2x - 10 = 0$

$x(x-5) + 2(x-5) = 0$

$(x-5)(x+2) = 0$

$x-5=0$ $x+2=0$

$x=5$ $x=-2$

Quad Equations Review

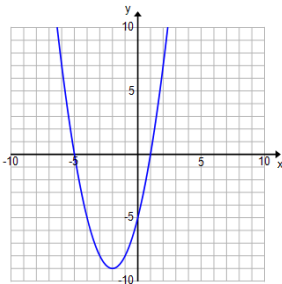
2. Solve all three equations; solve at least two by graphing, rounded to nearest hundredth if necessary:

a) $x^2 + 4x - 5 = 0$

b) $5x - 1 = 3x^2 + x$

c) $3x^2 + x - 1 = 2x^2 - x$

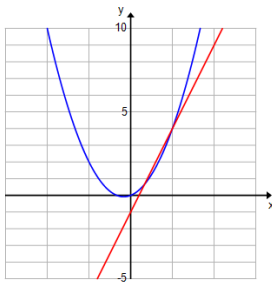
find zeros...



a) $x^2 + 4x - 5 = 0$

$$(x+5)(x-1) = 0 \quad x = -5 \quad x = 1$$

find intersection...



b) $0 = 3x^2 - 4x + 1$

$$0 = 3x^2 - 3x - 1x + 1$$

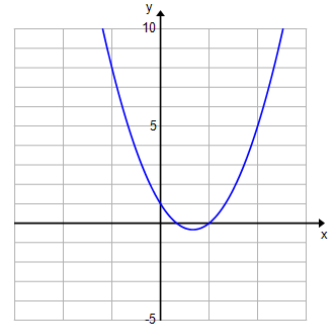
$$3x(x-1) - 1(x-1) = 0$$

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

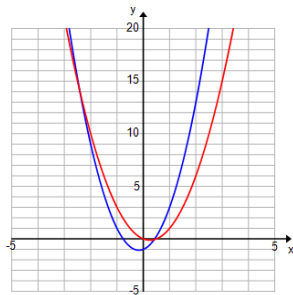
$$3x-1 = 0 \quad x-1 = 0$$

$$x = \frac{1}{3} = 0.33 \quad x = 1$$

find zeros...



find intersection...



c) $x^2 + 2x - 1 = 0$

$$\frac{-2 \pm \sqrt{4 - 4(1)(-1)}}{2(1)}$$

$$\frac{-2 \pm \sqrt{4+4}}{2}$$

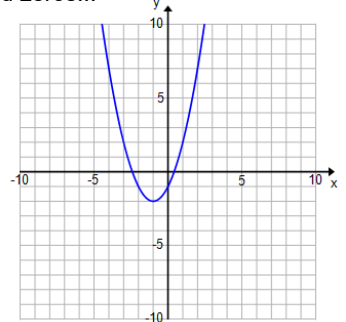
$$\frac{-2 \pm \sqrt{8}}{2} =$$

$$= \frac{-2 \pm 2\sqrt{2}}{2}$$

$$-1 + \sqrt{2} = 0.41$$

$$\text{and } -1 - \sqrt{2} = -2.41$$

find zeros...



Quad Equations Review

3. Solve with the quadratic formula, exact answers in lowest terms:

a) $x^2 - 4x - 2 = 0$

b) $3x^2 + 2 = x^2 - x + 6$

a) $x^2 - 4x - 2 = 0$

$$\frac{4 \pm \sqrt{16 - 4(1)(-2)}}{2(1)}$$

$$\frac{4 \pm \sqrt{24}}{2}$$

$$\frac{4 \pm 2\sqrt{6}}{2}$$

$$2 \pm \sqrt{6}$$

b) $3x^2 + 2 = x^2 - x + 6$

$$2x^2 + x - 4 = 0$$

$$\frac{-1 \pm \sqrt{1 - 4(2)(-4)}}{2(2)}$$

$$\frac{-1 \pm \sqrt{1 + 32}}{4}$$

$$\frac{-1 \pm \sqrt{33}}{4}$$

Quad Equations Review

4. Solve by any method. Round off your answers to nearest hundredth, if necessary:

a) $5x^2 + 8x + 3 = 0$

b) $8x^2 + 5x = 2x + 4$

$$5x^2 + 5x + 3x + 3 = 0$$

$$5x(x + 1) + 3(x + 1) = 0$$

$$(5x + 3)(x + 1) = 0$$

$$5x + 3 = 0 \quad x + 1 = 0$$

$$x = -\frac{3}{5} = -0.6 \quad x = -1$$

b) $8x^2 + 5x = 2x + 4$

$$8x^2 + 3x - 4 = 0$$

$$\frac{-3 \pm \sqrt{9 - 4(8)(-4)}}{2(8)}$$

$$\frac{-3 \pm \sqrt{9 + 128}}{16}$$

$$\frac{-3 \pm \sqrt{137}}{16}$$

$$\frac{-3 + \sqrt{137}}{16}$$

$$= 0.54$$

$$\frac{-3 - \sqrt{137}}{16}$$

$$= -0.92$$