

Name Key
Mrs. Roubos

Date _____
8A Period _____

Homework

1) $x^2 + 14x = 15$
 $x^2 + 14x + (\frac{14}{2})^2 = 15 + (\frac{14}{2})^2$ $b=14$
 $x^2 + 14x + 49 = 15 + 49$
 $x^2 + 14x + 49 = 64$
 $\sqrt{(x+7)^2} = \sqrt{64}$
 $x+7 = \pm 8$
 $x+7 = 8$
 $\frac{+7}{-7}$
 $x=1$

$x+7 = -8$
 $\frac{-7}{-7}$
 $x=-15$

$\{-15, 1\}$

2) $x^2 + 6x - 7 = 0$
 $x^2 + 6x = 7$
 $x^2 + 6x + (\frac{6}{2})^2 = 7 + (\frac{6}{2})^2$ $b=6$
 $x^2 + 6x + 9 = 7 + 9$
 $x^2 + 6x + 9 = 16$
 $\sqrt{(x+3)^2} = \sqrt{16}$
 $x+3 = \pm 4$
 $x+3 = 4$
 $\frac{-3}{-3}$
 $x=1$

$x+3 = -4$
 $\frac{-3}{-3}$
 $x=-7$

$\{-7, 1\}$

3) $x^2 - 8x + 16 = 0$
 $x^2 - 8x = -16$
 $x^2 - 8x + (\frac{-8}{2})^2 = -16 + (\frac{-8}{2})^2$ $b=-8$
 $x^2 - 8x + 16 = -16 + 16$
 $x^2 - 8x + 16 = 0$
 $\sqrt{(x-4)^2} = \sqrt{0}$
 $x-4 = 0 \rightarrow$ no \pm
 $\frac{+4}{+4}$
 $x=4$

*only 1 equation
b/c it's neutral*

$\{4\}$

4) $x^2 - 6x + 12 = 19$
 $x^2 - 6x = 7$
 $x^2 - 6x + (\frac{-6}{2})^2 = 7 + (\frac{-6}{2})^2$ $b=-6$
 $x^2 - 6x + 9 = 7 + 9$
 $x^2 - 6x + 9 = 16$
 $\sqrt{(x-3)^2} = \sqrt{16}$
 $x-3 = \pm 4$
 $x-3 = 4$
 $\frac{+3}{+3}$
 $x=7$

$x-3 = -4$
 $\frac{+3}{+3}$
 $x=-1$

$\{-1, 7\}$

$$5) x^2 - 2x - 2 = 0$$

$$\begin{array}{r} 12 \quad +2 \\ \hline \end{array}$$

$$x^2 - 2x = 2 \quad \frac{2}{2} + \left(\frac{b}{2}\right)^2 \quad | \quad b = -2$$

$$x^2 - 2x + \left(\frac{-2}{2}\right)^2 = 2 + \left(\frac{-2}{2}\right)^2$$

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

$$\sqrt{(x-1)^2} = \sqrt{3}$$

$$x-1 = \pm\sqrt{3}$$

$$x-1 = \sqrt{3}$$

$$\begin{array}{r} +1 \quad +1 \\ \hline \end{array}$$

$$x = 1 + \sqrt{3}$$

$$x-1 = -\sqrt{3}$$

$$\begin{array}{r} +1 \quad +1 \\ \hline \end{array}$$

$$x = 1 - \sqrt{3}$$

or

$$x = 1 \pm \sqrt{3}$$

$$6) c^2 - 4c = -12 \quad \left(\frac{b}{2}\right)^2 = -12 + \left(\frac{b}{2}\right)^2 \quad | \quad b = -4$$

$$c^2 - 4c + \left(\frac{-4}{2}\right)^2 = -12 + \left(\frac{-4}{2}\right)^2$$

$$c^2 - 4c + 4 = -12 + 4$$

$$c^2 - 4c + 4 = -8 \quad b =$$

$$\sqrt{(c-2)^2} = \sqrt{-8}$$

can't have a negative radicand

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

$$c-2 = \sqrt{-8}$$

$$\begin{array}{r} +2 \quad +2 \\ \hline \end{array}$$

$$c = 2 + \sqrt{-8}$$

$$c-2 = -\sqrt{-8}$$

$$\begin{array}{r} +2 \quad +2 \\ \hline \end{array}$$

$$c = 2 - \sqrt{-8}$$

No Real roots
B/c it's imaginary

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

$$7) x^2 - 12x + 3 = 8$$

$$\begin{array}{r} 3 \quad 3 \\ \hline \end{array}$$

$$| \quad b = -12$$

$$x^2 - 12x = 5 \quad -5 + \left(\frac{b}{2}\right)^2$$

$$x^2 - 12x + \left(\frac{-12}{2}\right)^2 = 5 + \left(\frac{-12}{2}\right)^2$$

$$x^2 - 12x + 36 = 5 + 36$$

$$x^2 - 12x + 36 = 41$$

$$\sqrt{(x-6)^2} = \sqrt{41}$$

$$x-6 = \pm\sqrt{41}$$

$$x-6 = \sqrt{41}$$

$$\begin{array}{r} +6 \quad +6 \\ \hline \end{array}$$

$$x = 6 + \sqrt{41}$$

$$x-6 = -\sqrt{41}$$

$$\begin{array}{r} +6 \quad +6 \\ \hline \end{array}$$

$$x = 6 - \sqrt{41}$$

or

$$x = 6 \pm \sqrt{41}$$

$$8) x^2 - 2x - 19 = 0$$

$$\begin{array}{r} +19 \quad +19 \\ \hline \end{array}$$

$$| \quad b = -2$$

$$x^2 - 2x = 19 \quad 19 + \left(\frac{b}{2}\right)^2$$

$$x^2 - 2x + \left(\frac{-2}{2}\right)^2 = 19 + \left(\frac{-2}{2}\right)^2$$

$$x^2 - 2x + 1 = 19 + 1$$

$$x^2 - 2x + 1 = 20$$

$$\sqrt{(x-1)^2} = \sqrt{20}$$

$$x-1 = \pm\sqrt{20}$$

$$x-1 = \pm 2\sqrt{5}$$

$$x-1 = 2\sqrt{5}$$

$$\begin{array}{r} +1 \quad +1 \\ \hline \end{array}$$

$$x = 1 + 2\sqrt{5}$$

$$x-1 = -2\sqrt{5}$$

$$\begin{array}{r} +1 \quad +1 \\ \hline \end{array}$$

$$x = 1 - 2\sqrt{5}$$

or

$$x = 1 \pm 2\sqrt{5}$$