Name: _____
Period: ____

Warm-up: ***before Solving with Square Roots***

Simplify

a. $\sqrt{80}$

$\sqrt{8\cdot 10}$

$=\sqrt{2\cdot 2\cdot 2\cdot 2\cdot 5}$

$= 4\sqrt{5}$

b. $\sqrt{-80}$

$= i\sqrt{2\cdot 2\cdot 2\cdot 2\cdot 5}$

$= 4i\sqrt{5}$

c. $\sqrt{5}\cdot\sqrt{5}$

$= 5$

d. $\frac{2}{\sqrt{3}}\left(\frac{\sqrt{3}}{\sqrt{3}}\right) = \frac{2\sqrt{3}}{3}$

Solve by factoring.

e. $16m - 6m^2 = 0$

$2m(8-3m) = 0$

$2m = 0$ $\quad$ $8 - 3m = 0$

$m = 0$ $\quad$ $-8 \quad -8$

$-3m = -8$

$m = \frac{-8}{-3} = \frac{8}{3}$

f. $x^2 - x - 42 = 0$

m: -42
A: -1
6, -7

$(x+6)(x-7) = 0$

$x+6=0$ $\quad$ $x-7=0$

$x=-6$ $\quad$ $x=7$

Solve the quadratic equation by using the Quadratic Formula

g. $3x^2 - x + 3 = 0$

a = 3

b = -1

c = 3

$$x = \frac{-(-1)\pm\sqrt{(-1)^2-4(3)(3)}}{2(3)}$$

$$x = \frac{1\pm\sqrt{1-36}}{6}$$

$$x = \frac{1\pm\sqrt{-35}}{6}$$

$$\boxed{x = \frac{1\pm i\sqrt{35}}{6}}$$

Rationalize the denominator *(get the radical out of the basement)*

$$\frac{2}{\sqrt{3}}\left(\frac{\sqrt{3}}{\sqrt{3}}\right) = \frac{2\sqrt{3}}{3}$$

$$\sqrt{\frac{16}{5}} = \frac{\sqrt{16}}{\sqrt{5}}\left(\frac{\sqrt{5}}{\sqrt{5}}\right) = \frac{4\sqrt{5}}{5}$$

What value(s) of x makes this statement true?

$x^2 = 16$ $\quad x = 4, -4$

Solve the equations using square roots

1. $x^2 = 64$

$\sqrt{x^2} = \sqrt{64}$

$x = \pm 8$

$x = 8, -8$

2. $2x^2 + 5 = 41$

$2x^2 = 36$

$\sqrt{x^2} = \sqrt{18}$

$x = \pm\sqrt{2 \cdot 3 \cdot 3}$

$x = \pm 3\sqrt{2}$

3. $3x^2 - 4 = 12$

$3x^2 = 16$

$\sqrt{x^2} = \sqrt{\frac{16}{3}}$

$x = \pm \frac{\sqrt{16}}{\sqrt{3}}\left(\frac{\sqrt{3}}{\sqrt{3}}\right)$

$x = \pm \frac{4\sqrt{3}}{3}$

~~3. $3x^2 - 4 = 12$~~

4. $\frac{2(x-3)^2}{2} = \frac{8}{2}$

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

$x - 3 = \pm 2$

$+3 \quad +3$

$x = 3 \pm 2$

$x = 5, 1$

$\sqrt{(m)^2} = \sqrt{5}$

$m = \pm\sqrt{5}$

5. $\frac{-3(x+2)^2}{-3} = \frac{18}{-3}$

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

$x + 2 = \pm i\sqrt{6}$

$-2 \quad -2$

$x = -2 \pm i\sqrt{6}$