Find all Complex Solutions (real and imaginary).

1. $3x^2 + 70 = 22$

2. $6 - 2x^2 = 96$

1. $3x^2 + 70 = 22$

$-70 \quad -70$

$\frac{3x^2}{3} = \frac{-48}{3}$

$\sqrt{x^2} = \sqrt{-16}$

$x = \pm 4i$

2. $6 - 2x^2 = 96$

$-6 \quad -6$

$\frac{-2x^2}{-2} = \frac{90}{-2}$

$\sqrt{x^2} = \sqrt{-45} = \pm i\sqrt{45}$

$\sqrt{45} = \sqrt{9 \cdot 5}$

$x = \pm 3i\sqrt{5}$

Find ALL solutions.

3. $(x + 7)^2 - 38 = -13$

$+38 \quad +38$

$\sqrt{(x+7)^2} = \sqrt{25}$

$x + 7 = \pm 5$

$-7 \quad -7$

$+5 - 7 = -2$

$-5 - 7 = -12$

$x = -12, -2$

Complex solutions when using the Quadratic Formula

Find ALL solutions

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

$x^2 - 6x + 25 = 0$

$\frac{6 \pm \sqrt{-6^2 - 4(1)(25)}}{2}$ $\quad \frac{6 \pm \sqrt{-64}}{2}$

$3 \pm 4i$

Find ALL solutions

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

$4x^2 - 4x + 13 = 0$ $\quad \frac{4 \pm \sqrt{4^2 - 4(4)(13)}}{2(4)}$

$\frac{4 \pm \sqrt{16 - 208}}{8}$

$\frac{4 \pm \sqrt{-192}}{8}$ $\quad \frac{4 \pm 8i\sqrt{3}}{8}$ $\quad \frac{1 \pm 2i\sqrt{3}}{2} = x$

Find ALL solutions

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

$x^2 - 3x + 11 = 0$

$b^2 - 4ac = -35$

$\frac{3 \pm \sqrt{-35}}{2} = \frac{3 \pm i\sqrt{35}}{2}$

You can now do Hwk #24

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Due Monday

Solve by completing the square.

$$x^2 - 6x + 32 = 0$$

$-32 \quad -32$

$$x^2 - 6x + 9 = -32 + 9$$

1st find half of b

2nd square this and add to both sides

$$(x - 3)^2$$

Now solve using square roots

$$\sqrt{(x-3)^2} = \sqrt{-23}$$

$$x - 3 = \pm\sqrt{23}$$

$+3 \quad +3$

$$x = 3 \pm \sqrt{23}$$