Name:

HW 3: §C.1-C.3

Complete the following problems to the best of your ability. **SHOW ALL OF YOUR WORK.** Unshown work will not be graded. You may use a calculator.

1. Solve the following equations for x.

   (a) $2x - 4 = 7$

   $2x = 11$ $\quad x = \frac{11}{2}$

   (b) $\left(\frac{x}{3} - \frac{1}{2} = -\frac{2}{3}\right)6$

   $2x - 3 = -4 \rightarrow 2x = -1 \rightarrow x = \frac{-1}{2}$

   (c) $x^2 - 9 = -5$

   $x^2 = 4$

   $x = \pm 2$

   (d) $\sqrt[3]{x} = 4$

   $x = 4^3 = 64$

   (e) $x^2 = 3x - 2$

   $x^2 - 3x + 2 = 0 \rightarrow (x-2)(x-1) = 0$ $\quad$ so $x = 1, 2$

   (f) $4 = -x^2 + 4x$

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

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

   So $x = 2$

2. Solve the equation $x^2 - 4x + 2 = 0$ by completing the square.

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

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

$(x-2)^2 - 2 = 0$ → $(x-2)^2 = 2$

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

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

3. Solve the equation $3x^2 + 6x - 5 = 0$ by using the quadratic formula.

$a = 3$, $b = 6$, $c = -5$

$x = \dfrac{-6 \pm \sqrt{36 - 4(3)(-5)}}{2(3)} = \dfrac{-6 \pm \sqrt{36+60}}{6} = -1 \pm \dfrac{\sqrt{96}}{6}$

4. Solve the following inequalities for x.

(a) $5 \leq 3x - 4 < 14$

$+4 \quad +4 \quad +4$

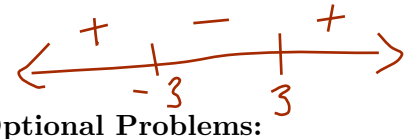
$\dfrac{9}{3} \leq \dfrac{3x}{3} < \dfrac{18}{3}$

$3 \leq x < 6$

(b) $x^2 \geq 9$ (be careful with this one!)

$x^2 - 9 \geq 0$

$(x-3)(x+3) \geq 0$



So $(-\infty, -3] \cup [3, \infty)$

Optional Problems:

C.1: All

C.2: 1-36

C.3: 1, 2, 11-34