## Practice Problems - Lecture 9a

**Problem 1.** Solve each linear inequality and write each answer in interval notation: (a)  $-4x + 3 \ge -2 + x$ ; (b)  $6x - (2x + 3) \ge 4x - 5$ ; (c)  $\frac{2x - 5}{-8} \le 1 - x$ ; (d) -7 < 2 + 3x < 5; (e)  $1 \le \frac{4x - 5}{-2} < 9$ .

**Problem 2.** If the cost to make x baseball caps is C = 100x + 6000 and the revenue from selling x baseball caps is R = 500x, how many caps need to be produced in order to at least break even?

**Problem 3.** Solve each quadratic inequality and write each answer in interval notation: (a)  $x^2 - 7x + 10 > 0$ ; (b)  $3x^2 + x \le 4$ ; (c) x(x + 1) < 12; (d)  $x^2 \ge 16$ . Answers:

1. (a) 
$$(-\infty, 1]$$
; (b)  $(-\infty, \infty)$ ; (c)  $\left(-\infty, \frac{1}{2}\right]$ ; (d)  $(-3, 1)$ ; (e)  $\left(-\frac{13}{4}, \frac{3}{4}\right]$ .

2. At least 15 caps.

3. (a) 
$$(-\infty, 2) \cup (5, \infty)$$
; (b)  $\left[-\frac{4}{3}, 1\right]$ ; (c)  $(-4, 3)$ ; (d)  $(-\infty, -4] \cup [4, \infty)$ .