ACMAT117 Fall 2024
Professor Manguba-Glover
Sections 3.1-3.2 Classwork (CW 8)   Name: _____

Complete as many of the following problems as you can with your group. You do not have to go in order. Each group will be given a specific problem that they must complete and present to either Professor MG or to Stefanie before they leave.

If **your entire table** finishes early, and you have presented your given problem, you may leave early.

(1) Suppose you have 20 ft of fencing that you want to use for a rectangular garden. What dimensions will give you the largest area of space to use?

(2) A baseball is hit straight up with initial velocity of 80 ft/sec at an initial height of 3 ft. The height, s, of the baseball after t seconds can be found using the following equation:

$$s(t) = -16t^2 + 80t + 3$$

   (a) How high is the baseball after 2 seconds?
   (b) What is the maximum height of the baseball and when does this occur?

(3) Solve the following:

   (a) $x^2 + 13x + 40 = 0$ (c) $-2x^2 = 5x + 3$
   (b) $36x^2 - 25 = 0$ (d) $3x^2 - 30x + 75 = 0$

(4) Solve the following:

   (a) $x^2 - 7x + 6 = 0$ (c) $3t^2 - 13t + 10 = 0$
   (b) $3x^2 - 6x - 72 = 0$ (d) $2x^2 = 8x + 2$

(5) Solve the following:

   (a) $8x^2 + 8x - 30 = 0$ (c) $6x^2 = 4 + 5x$
   (b) $x^2 - x - 12 = 0$ (d) $5x^2 + 2x + 6 = 0$

Key:

(1) 5 ft by 5 ft   (b) $x = -\frac{5}{6}, \frac{5}{6}$ (b) $x = 6, -4$ (b) $x = -3, 4$
(2) (a) 99 ft   (c) $x = -\frac{3}{2}, -1$ (c) $x = \frac{10}{3}, 1$
     (b) 103 ft, 2.5 s   (d) $x = 5$ (d) $2 + \sqrt{5}, 2 - \sqrt{5}$ (c) $x = \frac{4}{3}, -\frac{1}{2}$
(3) (a) $x = -5, -8$ (4) (a) $x = 1, 6$ (5) (a) $x = -\frac{5}{2}, \frac{3}{2}$ (d) No real solutions