NAME:  Solution

MAC 1147 Section 3079
Quiz Two

Please show all of your work in a NEAT and ORGANIZED fashion.

1. (3 points) Find all solutions (if any) to the following equation:

   \[ \sqrt{2x+5} - \sqrt{2x-7} = 2 \]
   \[ \sqrt{2x+5} = 2 + \sqrt{2x-7} \]
   \[ 2x + 5 = 4 + 4\sqrt{2x-7} + 2x - 7 \]
   \[ 8 = 4\sqrt{2x-7} \]
   \[ 2 = \sqrt{2x-7} \]
   \[ 4 = 2x - 7 \]
   \[ 2x = 11 \]
   \[ x = \frac{11}{2} \] (this solution works in the original equation)

2. (3 points) Solve the following quadratic equation by completing the square:

   \[ x^2 + 10x + 15 = 0 \]
   \[ x^2 + 10x + 5^2 = -15 + 5^2 \]
   \[ x^2 + 10x + 25 = 10 \]
   \[ (x + 5)^2 = 10 \]
   \[ x + 5 = \pm \sqrt{10} \]
   \[ x = -5 \pm \sqrt{10} \]

3. (3 points) Solve the following inequality, and graph the solution set:

   \[ |3 - \frac{1}{2}x| \leq 2 \]
   \[ -2 \leq 3 - \frac{1}{2}x \leq 2 \]
   \[ -5 \leq -\frac{1}{2}x \leq -1 \]
   \[ 5 \geq \frac{1}{2}x \geq 1 \]
   \[ 10 \geq x \geq 2 \]
   \[ 2 \leq x \leq 10 \]

[Graph showing solution set]