

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:

$$\begin{aligned}\sqrt{2x+5} - \sqrt{2x-7} &= 2 \\ \sqrt{2x+5} &= 2 + \sqrt{2x-7} \\ \cancel{2x} + 5 &= 4 + 4\sqrt{2x-7} + \cancel{2x} - 7 \\ 8 &= 4\sqrt{2x-7} \\ 2 &= \sqrt{2x-7} \\ 4 &= 2x - 7 \\ 2x &= 11 \\ x &= \frac{11}{2} \quad (\text{this solution works in the original equation})\end{aligned}$$

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

$$\begin{aligned}x^2 + 10x + 15 &= 0 \\ x^2 + 10x + 5^2 &= -15 + 5^2 \\ x^2 + 10x + 25 &= 10 \\ (x+5)^2 &= 10 \\ x+5 &= \pm\sqrt{10} \\ x &= -5 \pm \sqrt{10}\end{aligned}$$

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

$$\begin{aligned}|3 - \frac{1}{2}x| &\leq 2 \\ -2 &\leq 3 - \frac{1}{2}x \leq 2 \\ -5 &\leq -\frac{1}{2}x \leq -1 \\ 5 &\geq \frac{1}{2}x \geq 1 \\ 10 &\geq x \geq 2 \\ 2 &\leq x \leq 10\end{aligned}$$

