Math 354
Quiz #2 Name: _____ netID: _____ Section: _____

Consider the linear programming programming problem:
Maximize $z = 2x + 3y$ subject to

$$\begin{aligned} x + y &\leq 4 \\ 3x + y &\leq 6 \\ x + 3y &\leq 6 \\ x \geq 0,\ y &\geq 0. \end{aligned}$$

1. Sketch the set of feasible solutions to the linear programming problem, and draw the level curves for the objective function $z = \mathbf{c}^\top \mathbf{x} = k$ for the values $k = 6, 8, 10$.

2. Based on your sketch from the previous part, conjecture the optimal value of z. Explain (***without*** using the extreme point theorem) your reasoning.