**Dawson College**: **Linear Algebra**: 201-105-DW-S5: Fall 2022: **Quiz 13** name: _____

Books, watches, notes or cell phones are **not** allowed. The **only** calculators allowed are the Sharp EL-531**. You **must** show all your work, the correct answer is worth 1 mark the remaining marks are given for the work.

**Question 1.** *(10 marks)* Use the simplex method to solve the linear programming problem: Maximize the objective function: $x = 5x_1 + 2x_2 + 8x_3$ subject to

$$\begin{cases} 2x_1 - 4x_2 + x_3 \leq 42 \\ 2x_1 + 3x_2 - x_3 \leq 42 \\ 6x_1 - x_2 + 3x_3 \leq 42 \end{cases}.$$

Explicitly write the final value of the objective function, variables and slack variables.

**Bonus Question.** *(2 marks)* The barber is the "one who shaves all those, and those only, who do not shave themselves". The question is, does the barber shave himself?