Dr. Z.'s Math 354 REAL Quiz #9

NAME: (print!) _____

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1. Consider the following transportation problem, where **s** is the **supply vector**, **d** is the **demand vector**, and **C** is the **cost matrix** between the supply sites and the demand sites.

$$\mathbf{C} = \begin{bmatrix} 5 & 10 & 3 \\ 10 & 7 & 4 \\ 5 & 5 & 5 \end{bmatrix} \quad , \quad \mathbf{s} = \begin{bmatrix} 162 \\ 166 \\ 29 \end{bmatrix} \quad , \quad \mathbf{d} = \begin{bmatrix} 153 \\ 193 \\ 11 \end{bmatrix} \quad .$$

(a) (1 point) Explain why

$$\begin{bmatrix} 151 & 0 & 11 \\ 0 & 166 & 0 \\ 2 & 27 & 0 \end{bmatrix}$$

is a **basic fesible solution**.

(b): (7 points) Perform **one** iteration in the transportation algorithm to get a cheaper solution, or prove that none exists (i.e. that the above solution is optimal).