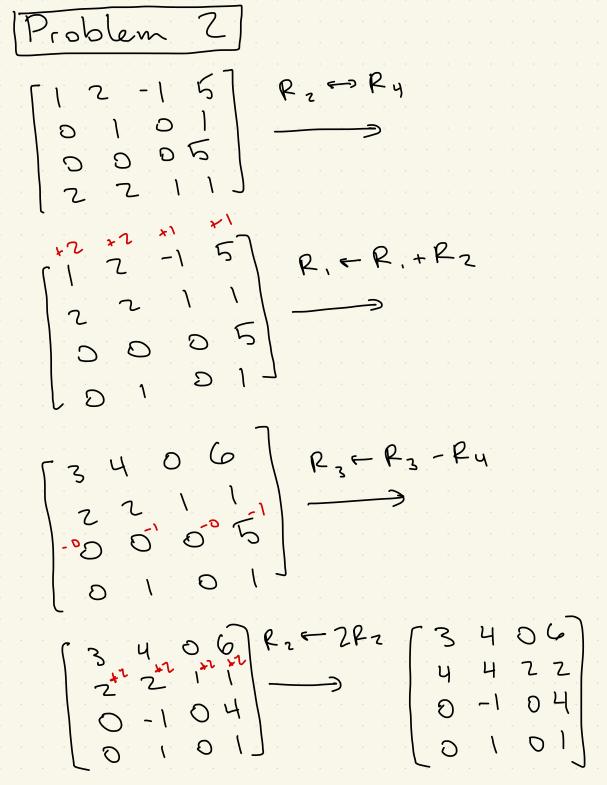
Homework 1 Solutions CAS CS 132 Fall 2024

$$\begin{bmatrix} 2 & 4 & 7 & 7 \\ -6 & -10 & -75 \\ +6 & +12 & +87 \end{bmatrix}$$

$$\begin{bmatrix} 2 & 4 & 79 \\ 0 & 2 & 12 \end{bmatrix}$$

 $R_2 \leftarrow R_2 + 3R_1$

Problem ← R2 - 2R, 2, 7, 7, -5, R3- R3+5F2 3 - l \ -> -P2-13P3 -3 -0 -



Problem 3.1

augmented: $\begin{bmatrix} 1 - 2 & 5 & 0 & 6 \\ -2 & 6 & -11 & 7 & -8 \\ 5 & -10 & 25 & 3 & 30 \end{bmatrix}$ ref: $\begin{bmatrix} 1 & 0 & 4 & 0 & 10 \\ 0 & 1 & -1/2 & 0 & 2 \\ 0 & 0 & 0 & 1 & 0 \end{bmatrix}$

infinitely many solutions

Problem 3.2

augmented:
$$\begin{bmatrix} 1 & -3 & 4 & 0 \\ -1 & 6 & 1 & 4 \\ 0 & 23 & 5 & 9 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 & 0 & -37/20 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \end{bmatrix}$$
(ref:
$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

unique solution

Problem 3.3

augmented: [1 5 3 - 4]
-2 -12 -14 25]

[Problem 4] Company C Explanation: The data as given is incoract by assumption. There are 5 possibilities for the correct data, gotten by subtracting 13 from one of the positions in the last column. Solving the system give by these to possibilities yields 5 possible costs-per-vnit of each part. Only one solution has all positive valves, the case of subtructing 13 from the total of company C.