1. The consumption matrix $C$ for an economy with three sectors $G$, $H$ and $M$ and the final demand vector $d$ of the open sector are
$$C = \begin{bmatrix}
0.02 & 0.1 & 0.01 \\
0.01 & 0.2 & 0.05 \\
0.03 & 0.4 & 0.07
\end{bmatrix} \quad \text{and} \quad d = \begin{bmatrix}
400 \\
500 \\
600
\end{bmatrix},$$
respectively.

1A) Find $x$, the vector showing the total numbers of units of goods produced by the three sectors $G$, $H$ and $M$. Show all your work and your answer rounded to TWO digits after the decimal point.

1B) Each unit produced by $H$ requires how many units of $G$’s product?

1C) Of the total number of units produced by $M$, how many are consumed by $H$?

2. Let $C = \begin{bmatrix}
2 & 1 & 3 & 4 & 1 \\
4 & 3 & 5 & 6 & 7 \\
-8 & -1 & -15 & -22 & 14
\end{bmatrix}$, then the RREF of $C$ is
$$\begin{bmatrix}
1 & 0 & 2 & 3 & 0 \\
0 & 1 & -1 & -2 & 0 \\
0 & 0 & 0 & 0 & 1
\end{bmatrix}.$$ Label the columns of $C$ as $c_1$, $c_2$, ... .

2A) Find a basis for $\text{Col}(C)$. Don’t write the vectors out; use the names $c_1$, etc.

2B) Find the sum $s$ of the last three column vectors of $C$. Now, $s$ must be in $\text{Col}(C)$. Indeed, express $s$ as a LC of the basis vectors from part 2A. Show any matrices (augmented, RREF’ed, etc) involved in your work.