

1. Define the variables that you would use for this word problem. **Do not solve this problem.**

Paul B. was bragging that he cut down 670 trees in one day with only 1231 swings of his mighty ax. With a single swing of his ax he could cut down a pine tree. Two swings were needed for each pecan tree and 4 swings were needed to lay low each majestic mesquite tree. When asked about the number of pine trees that he harvested, he replied, "The number of pine trees that I have cut down is seven times the number of pecan trees that have fallen to my skill with the ax." How many of each type of tree has Paul cut down?

x = the number of pine trees cut down.

y = the number of pecan trees cut down.

z = the number of mesquite trees cut down.

$$x + y + z = 670$$

$$x + 2y + 4z = 1231$$

$$x = 7y$$

2. Compute the following. If it is not possible, then write not possible.

$$A = \begin{bmatrix} x & 0 \\ -1 & -2 \\ 1 & 10 \end{bmatrix} \quad B = \begin{bmatrix} y & -1 & 3 \\ 0 & 2 & 1 \end{bmatrix} \quad C = \begin{bmatrix} 1 & m \\ 0 & 2 \\ 4 & -1 \end{bmatrix}$$

(a) $A^T = \begin{bmatrix} x & -1 & 1 \\ 0 & -2 & 10 \end{bmatrix}$

(b) $2B = \begin{bmatrix} 2y & -2 & 6 \\ 0 & 4 & 2 \end{bmatrix}$

(c) $2B + 3C =$ not possible