

1. Let $A = \begin{bmatrix} 3 & 6 & 0 & 4 \\ 6 & s & 2 & t \\ 1 & 5 & 3 & 8 \\ 2 & u & 1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 1 & 0 & 7 \\ 1 & 7 & 3 & s \\ 2 & 2 & 9 & t \\ 1 & 4 & 1 & 1 \end{bmatrix}$. Let $C = AB$ and suppose $C = \begin{bmatrix} ? & ? & h & ? \\ ? & 28 & ? & ? \\ 23 & ? & ? & 29 \\ ? & ? & 24 & ? \end{bmatrix}$.

1A. Find h .

1B. Find u .

1C. Find s .

1D. Find t .

2. Let $D = \begin{bmatrix} 7 & 4 \\ 5 & 3 \end{bmatrix}$.

2A. Find D^{-1} .

2B. Use D^{-1} to solve $D \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 18 \\ 14 \end{bmatrix}$.

3. Suppose that E , Q , P and G all belong to $M_{3 \times 3}$.

Under what conditions does $(GQPE)^{-1}$ exist, and what is $(GQPE)^{-1}$ in this case?