MAT 2705 005 Quiz 5 Print Name (Last, First) _____ /10

Show absolutely all work (no scratch paper calculations omitted or mental calculations unreported) ~~on this sheet in a clearly organized way~~, labeling problems, parts and expressions.

① $A = \begin{bmatrix} 3 & 1 \\ 5 & 2 \end{bmatrix}$ $B = \begin{bmatrix} 10 & 2 \\ 5 & 1 \end{bmatrix}$

a) Evaluate $\det(A)$, $\det(B)$.

b) Based on part a), which of these two matrices have an inverse and why?

c) Let C be the invertible matrix of these two. Evaluate C^{-1} using ~~row reduction~~ techniques.

d) Use your result to solve: $C\vec{x} = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$.

② $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$. Use the properties of the determinant under elementary row operations to derive the formula for $\det(A)$, justifying each step ~~with a reason~~.