QUIZ 5 - MATH 305 Friday, October 6

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Determine (if possible) the values of the constants a, b so that the matrices $A = \begin{bmatrix} 1 & -2 \\ a & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 2 \\ 5 & b \end{bmatrix}$ commute under matrix multiplication.

2. Given 2×2 matrices A, B, C the **cancelation law** $AB = AC \Rightarrow B = C$ does not always hold. Find a counterexample to show this.

3. Determine whether the following matrices A, B are invertible and, if so, find their inverses.

(a) $A = \begin{bmatrix} 3 & -5 \\ -2 & 4 \end{bmatrix}$

(b) $B = \begin{bmatrix} 1 & 0 & -2 \\ -3 & 1 & 4 \\ 2 & -3 & 4 \end{bmatrix}$