MATH 2000 **Quiz 3** FEB 18, 2019
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Full Name: _____

1. Find the inverse of the matrix $\begin{bmatrix} \mathbf{1} & \mathbf{1} & \mathbf{1} \\ \mathbf{1} & \mathbf{2} & \mathbf{3} \\ \mathbf{1} & \mathbf{3} & \mathbf{6} \end{bmatrix}$. [4]

2. A square matrix is called a permutation matrix if it contains a **1** exactly once in each row and in each column, with all other entries being **0**. Explain why all permutation matrices are invertible. [3]

3. Suppose we have two square matrices $\boldsymbol{A}$ and $\boldsymbol{B}$ such that $\boldsymbol{AB}$ is nonsingular. Explain why $\boldsymbol{B}$ must be nonsingular. [3]