

1. Compute the inverse of the following matrix if it exists.

$$A = \begin{pmatrix} 1 & 2 & -1 \\ 0 & 2 & 2 \\ -1 & -2 & 0 \end{pmatrix}$$

$$A^{-1} = \begin{pmatrix} -2 & -1 & -3 \\ 1 & 1/2 & 1 \\ -1 & 0 & -1 \end{pmatrix}$$

2. Let  $B$  be an  $n \times n$  matrix. Circle the statement which is *not* equivalent to  $B$  being invertible.

- (a) The equation  $B\mathbf{x} = \mathbf{0}$  has only the trivial solution.
- (b) The equation  $B\mathbf{x} = \mathbf{b}$  has a solution for all  $\mathbf{b} \in \mathbb{R}^n$ .
- (c)  $\dim \text{Col } B + \dim \text{Nul } B = n$ .
- (d) The rows of  $B$  are linearly independent.

Statement (c) is not equivalent to  $B$  being invertible.