

Linear. Quiz 2. Name \_\_\_\_\_ Time \_\_\_\_\_

Show all work on this page for full and/or partial credit. Put a box around your final answers in each part. Answer the first two questions last!

$$A = \begin{bmatrix} 0 & 0 & 1 & 3 \\ 0 & 4 & 2 & 2 \\ 0 & 0 & 0 & 0 \\ 1 & 0 & 3 & -3 \end{bmatrix} \quad B = \begin{bmatrix} 0 & 0 & 3 & 0 \\ 0 & 0 & 4 & 3 \\ 1 & 2 & 0 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix} \quad C = \begin{bmatrix} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 2 & 0 \\ 2 & 0 & 0 & 1 \end{bmatrix}$$

- (1) Which matrix has no inverse?
- (2) How many solutions  $\mathbf{x}$  are there (each solution is a point in  $\mathbb{R}^4$ ) to the equation  $B\mathbf{x} = \mathbf{0}$ ?
- (3) Find  $\det(A)$ .
- (4) Find  $\det(B)$  and  $\det(B^t)$ .
- (5) Find  $\det(AB^t)$ .
- (6) Find  $C^{-1}$ .
- (7) Find  $\det(C)$  and  $\det(C^{-1})$ .