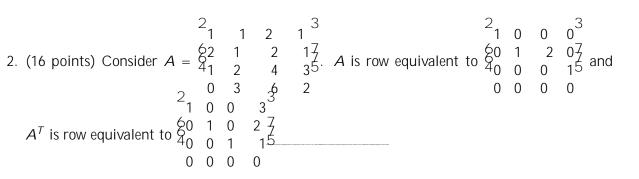
Write your name below. This exam is worth 100 points. On each problem, you must show all your work to receive credit on that problem. You may have one page of notes to use on this exam. You are not allowed to collaborate on the exam or seek outside help, nor can you use any other notes, the book, the recorded lectures, a calculator, any computational software, or material you nd online.

Name:

1. (28 points: 7 each) If the statement is always true

(c) If det(A) = 0, then $A\mathbf{x} = \mathbf{b}$ has no solutions.

(d) If W is the set of n n matrices, A, such that det(A) = 0, then W a subspace of \mathbb{R}^{n} , the vector space of all n n matrices.



- 3. Consider the matrix $A = \begin{pmatrix} 2 & & 3 \\ 1 & 2 & 3 \\ 43 & 5 & 55 \\ 2 & 1 & 2 \end{pmatrix}$
 - (a) (14 points) Use Gauss-Jordan Elimination to nd the inverse of A.

(b) (6 points) Use your answer from (a) to nd the solutimts089off1

5. Let
$$A = \begin{array}{ccc} 2 & & & 3 \\ 4^{0} & 0 & & 4 \\ 4^{1} & 2 & 3 \\ 0 & 1 & 7 \end{array}$$

(a) (15 points) Determine the permuted LU-factorization of A.

(b) (6 points) Use the answer from (a) to nd the determinant of *A*. (Other methods will receive no credit here.)