
NAME

e-mail

TA name

disc.
day/hour

GRADING

1. _____

2. _____

Math 320 Fall 2017 Practice Exam 2

Exam time: 1 HOUR

Directions:

Do all the work on these pages; use reverse side if needed.

For the True/False questions, no justification is necessary and no partial credit will be given. For the remaining questions, you must show all the details of your work in order to receive credit.

No books, notes, or calculators, and please **write legibly**.

TOTAL

Problem 1. Determine if the following statements are true or false. Write "True" or "False" next to each statement. *No justification is necessary.* (No partial credit.)

a) (10 points). The set V of all (x, y, z) in \mathbb{R}^3 so that $xyz = 1$ is a subspace of \mathbb{R}^3 .

b) (10 points). If a finite set S of vectors is linearly independent, then any subset T of S is also linearly independent.

c) (10 points). A 4×5 matrix A can have rank 5.

d) (10 points). If u_1, u_2, \dots, u_k are pairwise orthogonal vectors in \mathbb{R}^n , then $n \geq k$.

e) (10 points). Let u_1, u_2, \dots, u_k be vectors in \mathbb{R}^n . Then $\dim(\text{Span}\{u_1, u_2, \dots, u_k\}) = k$.

f) (10 points). The vectors $v_1 = (5, 0, -2)$ and $v_2 = (3, 1, 0)$ are part of some basis of \mathbb{R}^3 .

g) (10 points). Any four vectors u_1, u_2, u_3, u_4 in \mathbb{R}^3 are dependent.

Problem 2.(30 points). Let $A = \begin{bmatrix} 1 & 1 & 1 \\ 2 & 3 & 4 \\ 4 & 9 & 16 \end{bmatrix}$, and $\underline{b} = \begin{bmatrix} 1 \\ 1 \\ -1 \end{bmatrix}$.

- a) (10 points) Compute $\det(A)$.
- a) (10 points) Compute A^{-1} .
- b) (10 points) Solve $A\underline{x} = \underline{b}$ for \underline{x} .