Mathematics 1502 Test number 2 Thursday, 4 November 1999 version â

NAME_____
T/A_____

Instructions: Write the answers where indicated and give clear evidence of your reasoning (or points will be taken off). You may attach extra sheets with your work if it is organized enough to be helpful. Graphs should be clearly labeled. **Calculators are not permitted if they can store formulae or do symbolic mathematics (algebra & calculus).** Graphing is OK.

NOTE: The lines "KEY FORMULA OR METHOD" are provided so that if you are not going to solve the problem completely, you can show that you have some correct idea. They are not required. All answers should be as specific as possible. A "specific expression" is one you could show to someone who knows calculus, so that person could evaluate it without being shown the original problem or told anything. It should contain no expressions like "f(x)," only specific functions like "sin(x)."

SCORING - DO NOT WRITE ANSWERS ON THIS PAGE:

1 |___

2 |___

3 |___

4 |___

TOTAL _____

NAME_____

1. (10 points). Let $A := \begin{bmatrix} 5 & 6 \\ 7 & 8 \end{bmatrix}$ and $B := \begin{bmatrix} 1 & 0 \\ 1 & 0 \\ 1 & 1 \end{bmatrix}$. Calculate the following or else state why one cannot.

a) A B = _____

b) B A = _____

c) A^{-1} = _____

d) $A^{T} + A$ = _____

2 (10 points). Consider the triangle consisting of the origin, the point with coordinates (1, -1, 2), and the point with coordinates (4,0,4).

a) The area of the triangle is _____.

b) The formula for the plane containing the triangle is

_____.

c) The angle of the triangle at the origin is _____.

KEY FORMULA OR METHOD (optional for partial credit)_____

_____

NAME_____

For problems 3 and 4, let

$$M := \begin{bmatrix} 2 & 1 & 1 \\ 1 & 1 & 2 \\ 0 & 2 & 6 \end{bmatrix}.$$

3 (10 points). Find

(Parts a) and b) deleted)

c) det(M) = _____

KEY FORMULA OR METHOD (optional for partial credit)_____
_____

4 (10 points). Find all possible solutions of the following equations

a) $M\,\mathbf{x} = \begin{bmatrix} 1 \\ 1 \\ 2 \end{bmatrix}.$

x =

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b) $M\,\mathbf{x} = \begin{bmatrix} 1 \\ 0 \\ 1 \end{bmatrix}.$

x =

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KEY FORMULA OR METHOD (optional for partial credit)_____
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