Name SOLUTIONS

Mathematics 1553

Quiz 6

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2 November 2018

1. Suppose that A and B are $n \times n$ matrices and we know that AB is invertible. Must it be true that A and B are both invertible?

(YES) NO

2. What is the area of a triangle with vertices $(1,2)$, $(4,3)$, and $(2,7)$?

$$\left|\det\begin{pmatrix} 3 & 1 \\ 1 & 5 \end{pmatrix}\right| = 14$$

3. Compute the determinant of the following matrix:

$$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 5 \\ 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 9 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 \\ -1 & 0 & 0 & 0 & 0 & 0 & 0 \end{pmatrix}$$

Hint: use row operations!

$$(-1)(-1)(5) = 5$$

Turn the page!

4. Compute the determinant of the following matrix:

$$\begin{pmatrix} 2 & -3 & 1 \\ 2 & 0 & -1 \\ 1 & 4 & 6 \end{pmatrix}$$

$-(-3)(12+1) - 4(-2-2) = 39 + 16 = 55$

Is the above matrix invertible?

(YES) NO