Math 304 (Linear Algebra), Section 2 Your name: KEY

Quiz 10

November 19, 2010

1. Let A, B be $n \times n$ matrices and k be a real number. Circle "True" or "False" for each of the following problems. Circle "True" only if the statement is always true.

(a) True False $\det AB = \det A \cdot \det B$.

(b) True False $\det(A + B) = \det A + \det B$.

(c) True False $\det kA = k \cdot \det A$.

(d) True False $\det A^T = \det A$.

2. Calculate the determinant of the following matrix

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

$\det A = (-1)^{i+2} \cdot (-2) \cdot \det \begin{bmatrix} -2 & -1 & 3 \\ 2 & 0 & -3 \\ -1 & 2 & -4 \end{bmatrix} =$

$= 2 \cdot \left((-2) \cdot 0 \cdot (-4) + (-1) \cdot (-3) \cdot (-1) + 3 \cdot 2 \cdot 2 - (-1) \cdot 0 \cdot 3 - 2 \cdot (-3) \cdot (-2) - (-4) \cdot 2 \cdot (-1) \right) =$

$= 2(-3 + 12 - 12 - 8) = -22$