Class Problems and Homework

Physics 403: Mathematical Methods

February 25, 2008

Problems: Instructor, group and homework.

1. Compute the determinant and trace of each of the following two matrices.

$$\mathbf{A} = \begin{pmatrix} 3 & -2 & 8 \\ 0 & 1 & 4 \\ 2 & -3 & 3 \end{pmatrix} \qquad \mathbf{B} = \begin{pmatrix} 5 & -2 & 3 \\ -1 & 4 & 8 \\ -7 & 6 & -1 \end{pmatrix}.$$

2. Compute $\mathbf{A}\,\mathbf{B}$, then compute the determinant of the product. Compare with $\det \mathbf{A} \cdot \det \mathbf{B}$.

3. Determine the transpose of $\mathbf{A}$. Find the determinant of this matrix and compare with $\det \mathbf{A}$.

4. Compute

$$\begin{vmatrix} 0 & -2 & 8 & 1 \\ 3 & -1 & 0 & 4 \\ -2 & -3 & -1 & 0 \\ 7 & 3 & 1 & -1 \end{vmatrix}.$$

5. Complete problems 15.96 and 15.110.