

Math 14
Fall Term 2003
Supplementary Problems due Oct. 15, 2003

1. Describe a sequence of row operations of the form of adding a multiple of one row to another and multiplying a row by a nonzero constant that has the same effect on the matrix as exchanging two rows. Use it to explain why interchanging two rows of a matrix multiplies its determinant by -1.
2. Say as much as you can about the determinant of the matrix

$$\begin{pmatrix} 1 & x_0 & \cdots & x_0^n \\ 1 & x_1 & \cdots & x_1^n \\ \vdots & \vdots & & \vdots \\ 1 & x_n & \cdots & x_n^n \end{pmatrix}.$$

3. Explain why, if one of the matrices is not invertible, the product of the determinants of two n by n matrices is the determinant of their product.