Math 220 Assignment

November 28, 2001

Due Friday, November 30

1. Let S be the 2×2 matrix
$$\begin{pmatrix} 3/5 & 4/5 \\ 4/5 & -3/5 \end{pmatrix} .$$
   (a) Find a line in $\mathbf{R}^2$ characterized by the property that the matrix S represents the reflection in that line relative to the standard basis of $\mathbf{R}^2$.
   (b) Find an *orthogonal*[1] matrix U for which
$$U^{-1}SU$$
   is a diagonal matrix.

2. Is
$$\begin{pmatrix} -1 & 0 \\ 1 & 1 \end{pmatrix}$$
   the matrix of the reflection in some line?

Document network location for HTML:
`http://math.albany.edu:8000/math/pers/hammond/course/mat220/assgt/la011128.html`

[1] An orthogonal matrix is a square matrix that is inverted by its transpose. See the assignment for Nov. 7 where the properties of such a matrix were explored.