PHY 745 – Problem Set #2

This homework is due Friday, January 23, 2009.

Continue reading Chapter 3 in **Tinkham**. For the following matrices M, find the similar transformation S which creates the related diagonal matrix d:

$$d = S^{-1}MS,$$

choosing S to be *unitary* whenever appropriate.

1. In this example, θ represents a real number.

$$M = \begin{pmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{pmatrix}.$$

2. In this example, θ represents a real number.

$$M = \begin{pmatrix} \cos\theta & \sin\theta \\ \sin\theta & \cos\theta \end{pmatrix}.$$

3. In this example, you may wish to ask Maple to help.

$$M = \begin{pmatrix} 1.0 & 3.0 & 1.0 \\ 0.0 & 2.0 & 0.0 \\ 0.0 & 1.0 & 4.0 \end{pmatrix}.$$