MATH2010E HOMEWORK 3

Please do the following problems due to June 4, 5 pm.

1. Diagonalize the following matrices
$$\begin{pmatrix} 0 & 2 \\ 2 & 3 \end{pmatrix}, \begin{pmatrix} 1 & 3 \\ 3 & 1 \end{pmatrix}$$

2. **a**. Compute the Gaussian curvature and Mean curvature for the surface
   $\{z = x^2y + y^2\}$ at $(0,0,0)$.
   b. Find the principle curvatures κ_1, κ_2.

The following problems are from "Thomas' Calculus."

Exercises 14.7: 11, 24, 36.

Exercises 14.8: 2, 3, 7.