1. Let Let $A = \begin{bmatrix} -2 & 0 & 0 \\ 0 & 1 & -4 \\ 0 & -4 & 1 \end{bmatrix}$

   (a) Find the singular value decomposition of A

   (b) Notice A is the same matrix from last Tuesday's inclass work.
   Compare your answer to (a) with the orthogonal diagonalization you found then.

2. Download the Mathematica notebook dec07.nb from the course webpage, and work through the example.

   (a) Load the image for this problem, and use a singular value decomposition with 50 singular values to approximate the image.

   (b) How does the compressed image look? How much space does your decomposition save?

   (c) Try using a different number of singular values to look for your ideal tradeoff between loss of resolution and storage saving.