Problems for Lecture 7

2.

$$A = \begin{bmatrix} 3 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$A = \begin{bmatrix} 0 & 3 \\ 0 & 0 \end{bmatrix}$$

$$A = \begin{bmatrix} \frac{3}{2} & -\frac{3}{2} \\ -\frac{3}{2} & \frac{3}{2} \end{bmatrix}$$

10.

Note that a matrix times an orthogonal matrix do not change it's norm.

$$||A^{-1}||_2 = 1/\sigma_2$$

$$(||A^{-1}||_F)^2 = \frac{1}{{\sigma_1}^2} + \frac{1}{{\sigma_2}^2}$$