

1) Find the following:

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 5 & 6 & 7 \end{bmatrix} \begin{bmatrix} 2 & \pi \\ 0 & 0 \\ 1 & 3 \end{bmatrix}$$

2) Find the following:

$$\begin{vmatrix} 1 & 0 & 0 & 0 \\ 0 & 2 & 0 & 627 \\ \pi & 16 & 1 & 1 \\ 2\pi & 32 & 2 & 3 \end{vmatrix}$$

3) For what values of x is the matrix below NOT invertible?

$$\begin{bmatrix} -x & 2 \\ 1 & 1-x \end{bmatrix}$$