

Please show all necessary work completely and clearly.

- (1) (6 Points) Calculate the inverse of the matrix

$$\begin{pmatrix} 2 & 0 & 1 \\ 0 & 3 & 0 \\ 1 & 0 & 2 \end{pmatrix}$$

- (2) (4 Points) Calculate the determinant of the following matrix by expanding along the first row:

$$\begin{pmatrix} 1 & 1 & -3 \\ 2 & 11 & 3 \\ -1 & -3 & 1 \end{pmatrix}$$