Quiz 2

$$\text{Let } A = \begin{pmatrix} 2 & 1 & 3 \\ -1 & 2 & 0 \\ 3 & -2 & 1 \end{pmatrix}.$$

(1) Compute $\mathrm{adj}(A)$.

Solution: $\mathrm{adj}(A) = (A_{ji})$ where A_{ji} is ji-th cofactor. We have

$$\mathrm{adj}A = \begin{pmatrix} 2 & -7 & -6 \\ 1 & -7 & -3 \\ -4 & 7 & 5 \end{pmatrix}$$

(2) Compute $\det(A)$.

Solution: Using the cofactor formula to the 3rd column. We have

$$\det(A) = 3\begin{vmatrix} -1 & 2 \\ 3 & -2 \end{vmatrix} + 1\begin{vmatrix} 2 & 1 \\ -1 & 2 \end{vmatrix} = -12 + 5 = -7.$$

(3) Find A^{-1}.

Solution:

$$A^{-1} = \frac{1}{-7}\begin{pmatrix} 2 & -7 & -6 \\ 1 & -7 & -3 \\ -4 & 7 & 5 \end{pmatrix}$$