

Quiz 7 MATH 3504 Spring 2019

$$A = \begin{bmatrix} 3 & 0 \\ 1 & 10 \end{bmatrix}$$

Calculate  $\det A = \det \begin{bmatrix} 3 & 0 \\ 1 & 10 \end{bmatrix} = 3(10) - 0(1) = 30$

and by a formula in book,

$$A^{-1} = \frac{1}{\det A} \begin{pmatrix} 10 & 0 \\ -1 & 3 \end{pmatrix} = \frac{1}{30} \begin{pmatrix} 10 & 0 \\ -1 & 3 \end{pmatrix} \\ = \begin{pmatrix} \frac{1}{3} & 0 \\ -\frac{1}{30} & \frac{1}{10} \end{pmatrix}$$

Now calculate

$$AA^{-1} = \begin{pmatrix} 3 & 0 \\ 1 & 10 \end{pmatrix} \begin{pmatrix} \frac{1}{3} & 0 \\ -\frac{1}{30} & \frac{1}{10} \end{pmatrix}$$

$$= \begin{pmatrix} 3(\frac{1}{3}) + 0(-\frac{1}{30}) & 3(0) + 0(\frac{1}{10}) \\ 1(\frac{1}{3}) + 10(-\frac{1}{30}) & 1(0) + 10(\frac{1}{10}) \end{pmatrix}$$

$$= \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$= I,$$

as expected.