

Homework - June 20

Section 2.3 and Section 2.4

Section 2.3

4. Column 2 in A is a column of zeros. This means we can never have a pivot in this column. Thus, there is not a pivot in every row, so A is not invertible.

Section 2.4

10. We have
$$\begin{bmatrix} I & 0 & 0 \\ C & I & 0 \\ A & B & I \end{bmatrix} \begin{bmatrix} I & 0 & 0 \\ Z & I & 0 \\ X & Y & I \end{bmatrix} = \begin{bmatrix} I & 0 & 0 \\ 0 & I & 0 \\ 0 & 0 & I \end{bmatrix}.$$

Multiplying the left side and setting equal to the right side, we get the nontrivial equations

$$\begin{aligned} C + Z + 0 &= 0 \\ A + BZ + Y &= 0 \\ 0 + B + X &= 0 \end{aligned}$$

We have $Z = -C$, $X = -B$, and substituting $Y = BC - A$.