

Hints for homework problems

Math 20610, Spring 2026
Second assignment, due 1/30/26

1. §1.3 # 29

A diagonal matrix is a *square* matrix such that all entries *not* on the main diagonal are 0. For example,

$$\begin{bmatrix} 1 & 0 \\ 0 & 3 \end{bmatrix}, \begin{bmatrix} 3 & 0 & 0 \\ 0 & 4 & 0 \\ 0 & 0 & -2 \end{bmatrix}$$

are diagonal but

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 5 \\ 0 & 0 & 4 \end{bmatrix} \quad \text{or even} \quad \begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 5 \\ 0 & 0 & 0 \end{bmatrix}$$

are not (they're not square).

2. §1.3 #30

In class we talked about what a matrix of rank 1 looks like. That should help here.