

**WORKSHEET 10/26/23**  
**MATH 2331, FALL 2023**

- (1) Calculate the determinant of the following matrix:

$$A = \begin{bmatrix} 0 & 2 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 8 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 2 \\ 3 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 5 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \end{bmatrix}$$

- (2) Calculate the determinant of the following matrix:

$$A = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 0 & 2 & 3 & 4 & 5 & 6 \\ 0 & 0 & 3 & 4 & 5 & 6 \\ 0 & 0 & 0 & 4 & 5 & 6 \\ 0 & 0 & 0 & 0 & 5 & 6 \\ 0 & 0 & 0 & 0 & 0 & 6 \end{bmatrix}.$$

Do you notice anything?

- (3) Compare the determinant of the  $2 \times 2$  matrix  $A$  with the determinant of each of the following matrices:
- (a) the matrix obtained by swapping the rows of  $A$ ;
  - (b) the matrix obtained by scaling a row of  $A$ ;
  - (c) the matrix obtained by adding a multiple of one row of  $A$  to another.