

WORKSHEET 9/26/22
MATH 2331, FALL 2022

(1) Interpret the linear transformations represented by the following matrices geometrically.

(a) $\begin{bmatrix} 5 & 0 \\ 0 & 5 \end{bmatrix}$

(b) $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$

(c) $\begin{bmatrix} \frac{\sqrt{3}}{2} & -\frac{1}{2} \\ \frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$

(d) $\begin{bmatrix} 1 & 0 \\ \frac{1}{3} & 1 \end{bmatrix}$

(e) $\begin{bmatrix} 1 & -2 \\ 2 & 1 \end{bmatrix}$

(2) Use geometric reasoning to decide whether each of these matrices is invertible and to guess the inverse.

(3) How could you check your guesses above?

(4) Decide whether each matrix is invertible. If it is, find the inverse matrix. Don't work hard if you don't have to!

(a) $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 0 & 0 \\ 3 & 8 & 2 \end{bmatrix}$

(b) $\begin{bmatrix} 1 & 0 & 1 \\ 2 & 0 & 2 \\ 3 & 0 & 2 \end{bmatrix}$

(c) $\begin{bmatrix} 1 & 1 & 1 \\ 2 & 3 & 2 \end{bmatrix}$

(d) $\begin{bmatrix} 1 & 1 & 1 \\ 2 & 3 & 2 \\ 3 & 8 & 2 \end{bmatrix}$