

WORKSHEET 1/30/23
MATH 2331, SPRING 2023

(1) By thinking geometrically, decide which of the following transformations are invertible. What are the inverses?

- (a) Scaling
- (b) Projection
- (c) Reflection
- (d) Rotation
- (e) Shear
- (f) Rotation and scaling

(2) Based on your answers to the previous problem, guess the inverse of each matrix below.

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

(3) How could you check your guesses above?