

For each transformation T , find the corresponding matrix A .

(Remember that you can use the *Mathematica* worksheet from Tuesday to verify your answers for 1–3.)

1. $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ stretches horizontally away from the y -axis by a factor of 2
2. $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ rotates by $\frac{\pi}{3}$ counter-clockwise and then reflects across the x -axis
3. $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ rotates by $\frac{\pi}{4}$ clockwise and then stretches horizontally away from the y -axis by a factor of 3
4. $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ projects onto the yz -plane
5. $T : \mathbb{R}^3 \rightarrow \mathbb{R}^3$ rotates clockwise by $\frac{\pi}{2}$ about the x -axis
6. $T : \mathbb{R}^2 \rightarrow \mathbb{R}^3$ embeds \mathbb{R}^2 into the xy -plane in \mathbb{R}^3