

Exercise 30

In Exercises 29–32, find the elementary row operation that transforms the first matrix into the second, and then find the reverse row operation that transforms the second matrix into the first.

$$\begin{bmatrix} 1 & 3 & -4 \\ 0 & -2 & 6 \\ 0 & -5 & 9 \end{bmatrix}, \begin{bmatrix} 1 & 3 & -4 \\ 0 & 1 & -3 \\ 0 & -5 & 9 \end{bmatrix}$$

Solution

Starting with

$$\begin{bmatrix} 1 & 3 & -4 \\ 0 & -2 & 6 \\ 0 & -5 & 9 \end{bmatrix},$$

divide the second row by 2 to get

$$\begin{bmatrix} 1 & 3 & -4 \\ 0 & -1 & 3 \\ 0 & -5 & 9 \end{bmatrix}.$$

Starting with

$$\begin{bmatrix} 1 & 3 & -4 \\ 0 & -1 & 3 \\ 0 & -5 & 9 \end{bmatrix},$$

multiply the second row by 2 to get

$$\begin{bmatrix} 1 & 3 & -4 \\ 0 & -2 & 6 \\ 0 & -5 & 9 \end{bmatrix}.$$