

Name:

Problem 1: *Perform the matrix multiplication or state “not defined.”*

$$\begin{pmatrix} 5 & 2 \\ 3 & 1 \end{pmatrix} \begin{pmatrix} -1 & 2 \\ 3 & -5 \end{pmatrix}.$$

Solution: This matrix multiplication is defined because the first matrix has as many columns as the second matrix has rows.

We have:

$$\begin{aligned} \begin{pmatrix} 5 & 2 \\ 3 & 1 \end{pmatrix} \begin{pmatrix} -1 & 2 \\ 3 & -5 \end{pmatrix} &= \begin{pmatrix} 5 \cdot (-1) + 2 \cdot 3 & 5 \cdot 2 + 2 \cdot (-5) \\ 3 \cdot (-1) + 1 \cdot 3 & 3 \cdot 2 + 1 \cdot (-5) \end{pmatrix} \\ &= \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \end{aligned}$$