

Section 11.4b

Multiplying Matrices

Matrix Multiplication

$$\begin{bmatrix} 2 & 3 & 1 \\ 2 & -7 & 4 \end{bmatrix} \cdot \begin{bmatrix} 3 & 4 & 5 \\ 1 & 1 & 4 \\ 2 & 1 & 4 \end{bmatrix}$$

2×3 3×3

$$\begin{array}{l} \begin{array}{l} 2 \cdot 3 + 3 \cdot 1 + 1 \cdot 2 \\ 6 + 3 + 2 \end{array} \quad \begin{array}{l} 2 \cdot 4 + 3 \cdot 1 + 1 \cdot 1 \\ 8 + 3 + 1 \end{array} \quad \begin{array}{l} 10 + 12 + 4 \end{array} \\ \begin{array}{l} 2 \cdot 3 + (-7) \cdot 1 + 4 \cdot 2 \\ 6 - 7 + 8 \end{array} \quad \begin{array}{l} 2 \cdot 4 + (-7) \cdot 1 + 4 \cdot 1 \\ 8 - 7 + 4 \end{array} \quad \begin{array}{l} 10 + (-28) + 16 \end{array} \end{array}$$

$$\Rightarrow \begin{bmatrix} 11 & 12 & 26 \\ 7 & 5 & -2 \end{bmatrix}$$

9)
$$\begin{bmatrix} 3 & -1 \\ -3 & 6 \\ -6 & -6 \end{bmatrix} \cdot \begin{bmatrix} -1 & 6 \\ 5 & 4 \end{bmatrix}$$

$$\underline{3} \times \underline{2} \quad \underline{2} \times \underline{2}$$

$$\begin{bmatrix} -3 + (-5) & 18 + (-4) \\ 3 + 30 & -18 + 24 \\ 6 + (-30) & -36 + (-24) \end{bmatrix}$$

$$= \begin{bmatrix} -8 & 14 \\ 33 & 6 \\ -24 & -60 \end{bmatrix}$$

$$10) \begin{bmatrix} 5 & 4 \\ 2 & -1 \end{bmatrix} \cdot \begin{bmatrix} 6 & 5 \\ 5 & -6 \\ 6 & 0 \end{bmatrix}$$

2×2 3×2

undefined

