

Matrices

Multiply Matrices

To multiply two matrices the # of columns in the first matrix must equal the # of rows in the second matrix. (they must also have the same meaning).

Try this

$$\begin{matrix} C \\ D \\ E \end{matrix} \begin{pmatrix} -1 & 3 \\ 4 & -2 \\ 5 & 0 \end{pmatrix} \cdot \begin{matrix} A \\ B \end{matrix} \begin{pmatrix} -3 & 2 \\ -4 & 1 \end{pmatrix} = \begin{matrix} F \\ G \end{matrix} \begin{pmatrix} -9 & 1 \\ -4 & 6 \\ -15 & 10 \end{pmatrix}$$

work

$$\begin{pmatrix} (-1)(-3) + (3)(-4) & (-1)(2) + (3)(1) \\ (4)(-3) + (-2)(-4) & (4)(2) + (-2)(1) \\ (5)(-3) + (0)(-4) & (5)(2) + (0)(1) \end{pmatrix} = \begin{pmatrix} 3-12 & -2+3 \\ -12+8 & 8-2 \\ -15+0 & 10+0 \end{pmatrix} = \begin{pmatrix} -9 & 1 \\ -4 & 6 \\ -15 & 10 \end{pmatrix}$$

Ex #2

Sports Team decides to purchase T-shirts & sweatpants as a fund raiser. They order:  
 20 medium, 30 large, 5 X-large t-shirts  
 5 small, 15 medium, 20 large, 10 X-large sweatpants  
 If T-shirts are sold for \$15 each & sweatpants for \$20 each, how much money will the team make if they sell everything?

$$\begin{matrix} \text{sm} \\ \text{med} \\ \text{lg} \\ \text{x-lg} \end{matrix} \begin{pmatrix} 0 & 5 \\ 20 & 15 \\ 30 & 20 \\ 5 & 10 \end{pmatrix} \cdot \begin{matrix} \text{t-shirts} \\ \text{sweatpants} \end{matrix} \begin{pmatrix} \$15 \\ \$20 \end{pmatrix}$$

$$= \begin{matrix} \text{small} \\ \text{med} \\ \text{lg} \\ \text{x-lg} \end{matrix} \begin{pmatrix} (0)(15) + (5)(20) \\ (20)(15) + (15)(20) \\ (30)(15) + (20)(20) \\ (5)(15) + (10)(20) \end{pmatrix}$$

$$= \begin{matrix} \text{sm} \\ \text{med} \\ \text{lg} \\ \text{x-lg} \end{matrix} \begin{pmatrix} 100 \\ 600 \\ 850 \\ 275 \end{pmatrix}$$

Total Amt  
 = Sum of the column  
 = \$1825