Precalculus Worksheet #4 Unit 7 Selected Solutions

Given matrices A and B below. Perform the indicated operations.

$$A = \begin{bmatrix} 1 & -1 \\ 4 & 3 \end{bmatrix} \qquad B = \begin{bmatrix} 2 & -3 \\ -1 & 1 \end{bmatrix}$$

5. $$2A + 3B = 2 \bullet \begin{bmatrix} 1 & -1 \\ 4 & 3 \end{bmatrix} + 3 \bullet \begin{bmatrix} 2 & -3 \\ -1 & 1 \end{bmatrix} = \begin{bmatrix} 2 & -2 \\ 8 & 6 \end{bmatrix} + \begin{bmatrix} 6 & -9 \\ -3 & 3 \end{bmatrix} = \begin{bmatrix} 8 & -11 \\ 5 & 9 \end{bmatrix}$$

Given matrices C and D below. Find the indicated products.

$$C = \begin{bmatrix} 4 & -1 & -2 \\ -3 & 2 & 5 \end{bmatrix} \qquad D = \begin{bmatrix} -5 & 2 \\ 7 & 6 \\ 3 & 8 \end{bmatrix}$$

9. $$CD = \begin{bmatrix} 4 & -1 & -2 \\ -3 & 2 & 5 \end{bmatrix} \begin{bmatrix} -5 & 2 \\ 7 & 6 \\ 3 & 8 \end{bmatrix} =$$

$$\begin{bmatrix} (4)(-5) + (-1)(7) + (-2)(3) & (4)(2) + (-1)(6) + (-2)(8) \\ (-3)(-5) + (2)(7) + (5)(3) & (-3)(2) + (2)(6) + (5)(8) \end{bmatrix} = \begin{bmatrix} -33 & -14 \\ 44 & 46 \end{bmatrix}$$

Given matrix A, find A^{-1}. Show your work neatly organized.

11. $$A = \begin{bmatrix} 2 & 7 \\ 1 & 3 \end{bmatrix} \qquad A^{-1} = \begin{bmatrix} -3 & 7 \\ 1 & -2 \end{bmatrix}$$

$$\begin{bmatrix} 2 & 7 & 1 & 0 \\ 1 & 3 & 0 & 1 \end{bmatrix} \xrightarrow[R_1 \leftrightarrow R_2]{} \begin{bmatrix} 1 & 3 & 0 & 1 \\ 2 & 7 & 1 & 0 \end{bmatrix}$$

$$\xrightarrow[-2R_1 + R_2]{} \begin{bmatrix} 1 & 3 & 0 & 1 \\ 0 & 1 & 1 & -2 \end{bmatrix} \xrightarrow[-3R_2 + R_1]{} \begin{bmatrix} 1 & 0 & -3 & 7 \\ 0 & 1 & 1 & -2 \end{bmatrix}$$