Given the following two matrices,

$$A = \begin{bmatrix} 2 & -1 & 0 & 1 \\ -3 & 1 & 2 & 3 \\ 0 & 4 & -2 & -1 \\ 2 & 3 & 1 & 2 \end{bmatrix} \qquad B = \begin{bmatrix} 1 & 3 & -1 & 2 \\ 2 & -1 & -2 & 3 \\ -3 & 2 & 0 & 1 \\ 1 & 1 & 2 & 2 \end{bmatrix}$$

1. What is the product C = AB?

Hint:

$$C = \begin{bmatrix} 1 & 8 & 2 & 0 \\ -4 & -3 & 7 & -4 \\ 13 & -9 & -10 & 11 \\ 7 & 7 & -4 & 12 \end{bmatrix}$$

2. Transpose B and find the product by multiplying the rows of A with the rows of B. Did you get the same result as in question 1?

3. Perform block matrix multiply using 2 X 2 blocks. DId you get the same result as in question 1 and 2?