

Math 1313 - Chapter 3 review

How to study: Study the class notes, take your practice test, review homework problems and quizzes, and try to do as many exercises as you can from the textbook. Note that answers are provided at the back of the book to all odd numbered problems. Here I provide some examples for you. This is not a complete list, studying only these examples is not enough!

1. Find the transpose of the matrix.

$$(a) A = \begin{bmatrix} 1 & -4 & 0 \\ 2 & -1 & 2 \\ 0 & -1 & 2 \\ 1 & 3 & 5 \end{bmatrix} \quad (b) B = \begin{bmatrix} 2 & -1 & 3 & 5 & -2 & -6 \\ 1 & -1 & 2 & -7 & 3 & 2 \\ 4 & 6 & -3 & 2 & 1 & 0 \\ 0 & 2 & 3 & -2 & 1 & 1 \end{bmatrix}$$

2. Solve the following.

$$(a) 2 \begin{bmatrix} 2 & 0 & -2 \\ -3 & -3 & -4 \\ 1 & -2 & 7 \end{bmatrix} - 4 \begin{bmatrix} 5 & -6 & -3 \\ -4 & 2 & 1 \\ 3 & -5 & 6 \end{bmatrix}$$

$$(b) \begin{bmatrix} 1 & -1 & 6 & -4 \\ 2 & 3 & -2 & -5 \end{bmatrix} \cdot \begin{bmatrix} 2 & 7 & 11 \\ 3 & -4 & -2 \\ 1 & 5 & 1 \end{bmatrix}$$

$$(c) \begin{bmatrix} 2 & -3 \\ 0 & 4 \\ 1 & 7 \\ -5 & -2 \end{bmatrix} \cdot \begin{bmatrix} 2 & 7 & 11 & 8 \\ 3 & -4 & -2 & -3 \end{bmatrix}$$

3. Solve for the unknowns.

$$(a) \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ x & -1 \end{bmatrix} - 3 \begin{bmatrix} y-1 & 2 \\ 1 & 2 \\ 4 & -3 \end{bmatrix} = 2 \begin{bmatrix} -4 & -2 \\ 0 & z \\ 4 & 4 \end{bmatrix}$$

$$(b) 5 \begin{bmatrix} 4 & x & 7 \\ -3 & 2 & 5 \\ 6 & -4 & s \end{bmatrix} - 2 \begin{bmatrix} -2 & -1 & t \\ -y & -3 & -5 \\ 9 & -4 & -6 \end{bmatrix} = 4 \begin{bmatrix} 6 & -2 & 7 \\ -9 & 4 & z \\ 3 & w & 2 \end{bmatrix}$$

4. Find the inverse of the matrix, if possible.

(a) $A = \begin{bmatrix} 6 & -9 \\ 8 & -12 \end{bmatrix}$

(b) $B = \begin{bmatrix} 7 & 11 \\ -9 & -12 \end{bmatrix}$

(c) $C = \begin{bmatrix} -3 & 2 & 4 \\ 7 & -1 & 3 \\ -2 & 3 & 7 \end{bmatrix}$

5. Given the linear system of equations. How would you set up using the coefficient matrix to solve the system?

(a) $3x - 7y = -8$
 $4y - 3x = 13$

(b) $7x + 2y - 2z = 11$
 $-5x + 2y - 4z = -13$
 $4x - 3y + 2z = -7$