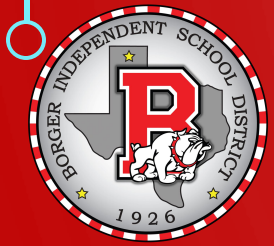


BOARD NOTES

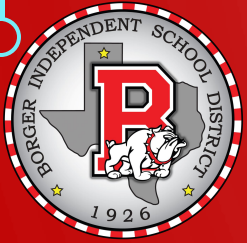
7 JANUARY 2020





2A.3 (B) solve systems of three linear equations in three variables by using Gaussian elimination, technology with matrices, and substitution;

We will be able to calculate the solution for a system of equations using inverse matrices.

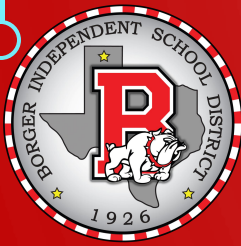


WHAT WE NEED:

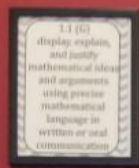
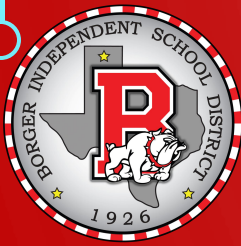
- TI-84
- Definition:
 - Consistent
 - Inconsistent
- Solve for a variable

I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

- Matrix



$$\begin{matrix} A & X & B \\ \begin{bmatrix} 4 & 3 \\ 3 & -1 \end{bmatrix} & \begin{bmatrix} x \\ y \end{bmatrix} & = \begin{bmatrix} -4 \\ -3 \end{bmatrix} \end{matrix} \quad (-1, 0)$$
$$\begin{cases} 4x + 3y = -4 \\ 3x - y = -3 \end{cases}$$
$$x = \frac{\begin{vmatrix} -4 & 3 \\ -3 & -1 \end{vmatrix}}{\begin{vmatrix} 4 & 3 \\ 3 & -1 \end{vmatrix}} = \frac{13}{-13} = -1$$
$$y = \frac{\begin{vmatrix} 4 & -4 \\ 3 & -3 \end{vmatrix}}{-13} = \frac{0}{-13} = 0$$



$$\frac{5}{2} \left(\frac{2}{5} x \right) = (6) \frac{5}{2}$$

$$x = 15$$

$$A^{-1}AX = A^{-1}B$$

$$X = A^{-1}B$$

$$A^{-1}$$

1) $|A| = (4)(-1) - (3)(3)$
 $= -13$

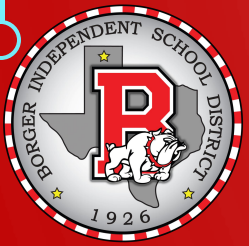
$$2) \frac{1}{-13} \begin{bmatrix} -1 & -3 \\ -3 & 4 \end{bmatrix} = \begin{bmatrix} \frac{1}{13} & \frac{3}{13} \\ \frac{3}{13} & -\frac{4}{13} \end{bmatrix}$$

$$X = A^{-1}B$$

$$= \begin{bmatrix} \frac{1}{13} & \frac{3}{13} \\ \frac{3}{13} & -\frac{4}{13} \end{bmatrix} \begin{bmatrix} -4 \\ -3 \end{bmatrix}$$

$$= \begin{bmatrix} -\frac{4}{13} - \frac{9}{13} \\ -\frac{12}{13} + \frac{12}{13} \end{bmatrix}$$

$$= \begin{bmatrix} -1 \\ 0 \end{bmatrix}$$



$$\begin{cases} 2x + 3y + z = -1 \\ 3x + 3y + z = 1 \\ 2x + 4y + z = -2 \end{cases}$$

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

A X B

$$(2, -1, -2)$$

$$1) A^{-1} = \begin{bmatrix} -1 & 1 & 0 \\ -1 & 0 & 1 \\ 6 & -2 & -3 \end{bmatrix}$$

