BOARD NOTES

6 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

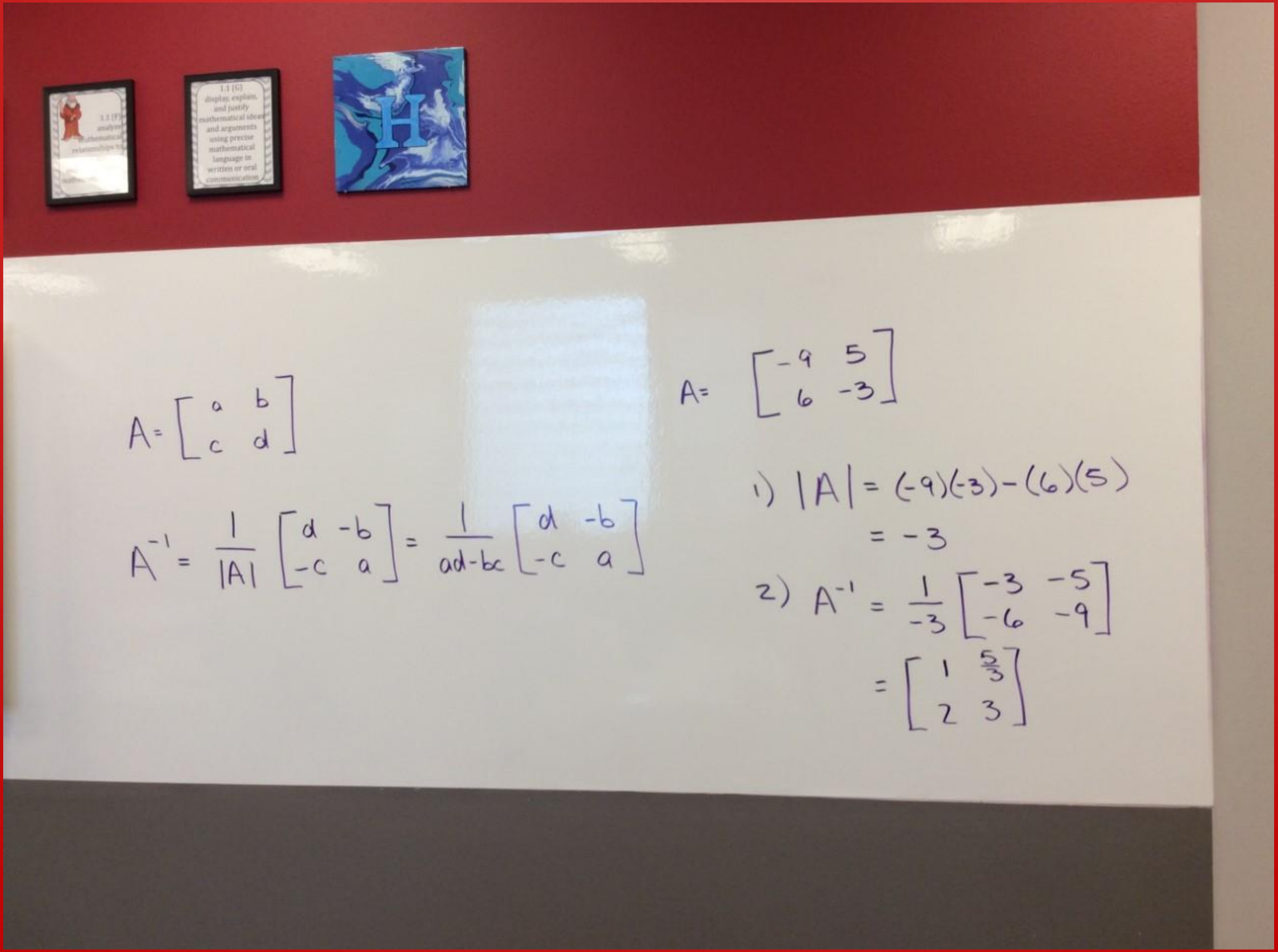
I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

- Matrix

BORGER INDEPENDENT SCHOOL DISTRICT 1926

$$\begin{bmatrix} 2 & 1 \\ 3 & -2 \end{bmatrix} \cdot \begin{bmatrix} \frac{2}{7} & \frac{1}{7} \\ \frac{3}{7} & -\frac{2}{7} \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$= \begin{bmatrix} 2\cdot\frac{2}{7} + 1\cdot\frac{3}{7} & 2\cdot\frac{1}{7} + 1\cdot\frac{-2}{7} \\ 3\cdot\frac{2}{7} + (-2)\cdot\frac{3}{7} & 3\cdot\frac{1}{7} + (-2)\cdot\frac{-2}{7} \end{bmatrix} = \begin{bmatrix} \frac{4}{7} + \frac{3}{7} & \frac{2}{7} - \frac{2}{7} \\ \frac{6}{7} - \frac{6}{7} & \frac{3}{7} + \frac{4}{7} \end{bmatrix}$$


1.1 (G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication
H
$A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$
$A^{-1} = \frac{1}{|A|}\begin{bmatrix} d & -b \\ -c & a \end{bmatrix} = \frac{1}{ad-bc}\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$
$A = \begin{bmatrix} -9 & 5 \\ 6 & -3 \end{bmatrix}$
1) $|A| = (-9)(-3)-(6)(5)$
$= -3$
2) $A^{-1} = \frac{1}{-3}\begin{bmatrix} -3 & -5 \\ -6 & -9 \end{bmatrix}$
$= \begin{bmatrix} 1 & \frac{5}{3} \\ 2 & 3 \end{bmatrix}$

$$\begin{bmatrix} -9 & 5 \\ 6 & -3 \end{bmatrix} \begin{bmatrix} 1 & \frac{5}{3} \\ 2 & 3 \end{bmatrix}$$

$$= \begin{bmatrix} (-9)(1)+(5)(2) & (-9)(\frac{5}{3})+(5)(3) \\ (6)(1)+(-3)(2) & (6)(\frac{5}{3})+(-3)(3) \end{bmatrix}$$

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

$$\begin{bmatrix} 6 & -16 \\ -3 & 8 \end{bmatrix}$$

$$\begin{vmatrix} 6 & -16 \\ -3 & 8 \end{vmatrix} = (6)(8)-(-3)(-16)$$

$$= 48 - 48$$

$$= 0$$

NO INVERSE EXISTS

$$\begin{bmatrix}3&0&-2\\1&1&5\\-3&2&-1\end{bmatrix}\begin{bmatrix}a&b&c\\d&e&f\\g&h&i\end{bmatrix}=\begin{bmatrix}1&0&0\\0&1&0\\0&0&1\end{bmatrix}$$

$6)(8)-(-3)(-16)$

$48-48$

0

XISTS

$$\begin{bmatrix}3a-2g&3b-2h&3c-2i\\a+d+5g&b+e+5h&c+f+5i\\-3a+2d-g&-3b+2e-h&-3c+2f-i\end{bmatrix}=\begin{bmatrix}1&0&0\\0&1&0\\0&0&1\end{bmatrix}$$

$$\left\{\begin{array}{l} 3a - 2g = 1 \\ 3b - 2h = 0 \\ 3c - 2i = 0 \\ a + d + 5g = 0 \\ b + e + 5h = 1 \\ c + f + 5i = 0 \\ -3a + 2d - g = 0 \\ -3b + 2e - h = 0 \\ -3c + 2f - i = 1 \end{array}\right.$$