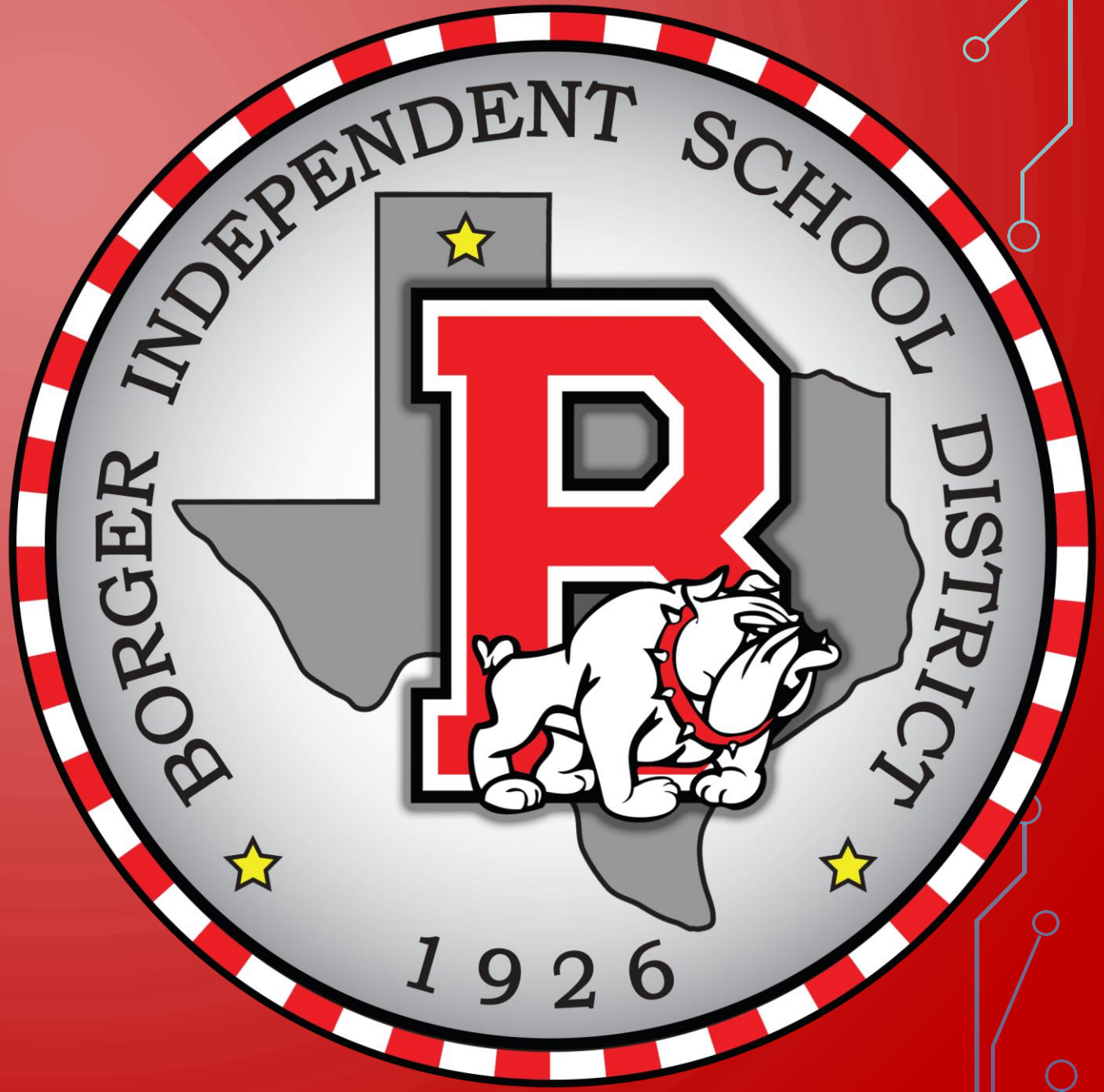
BOARD NOTES

17 DECEMBER 2019



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

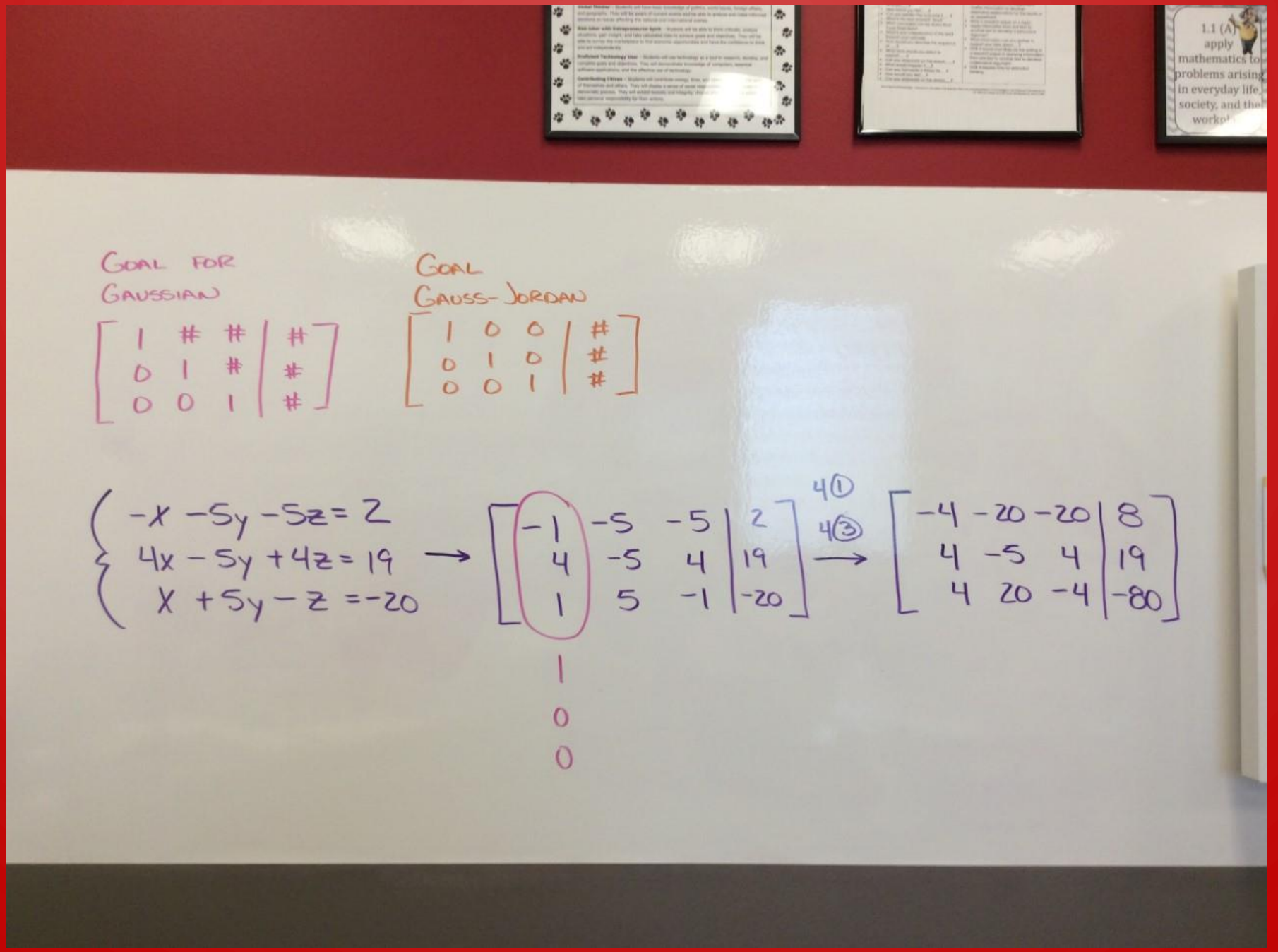
We will be able to calculate the solution for a system of equations using Gaussian elimination.

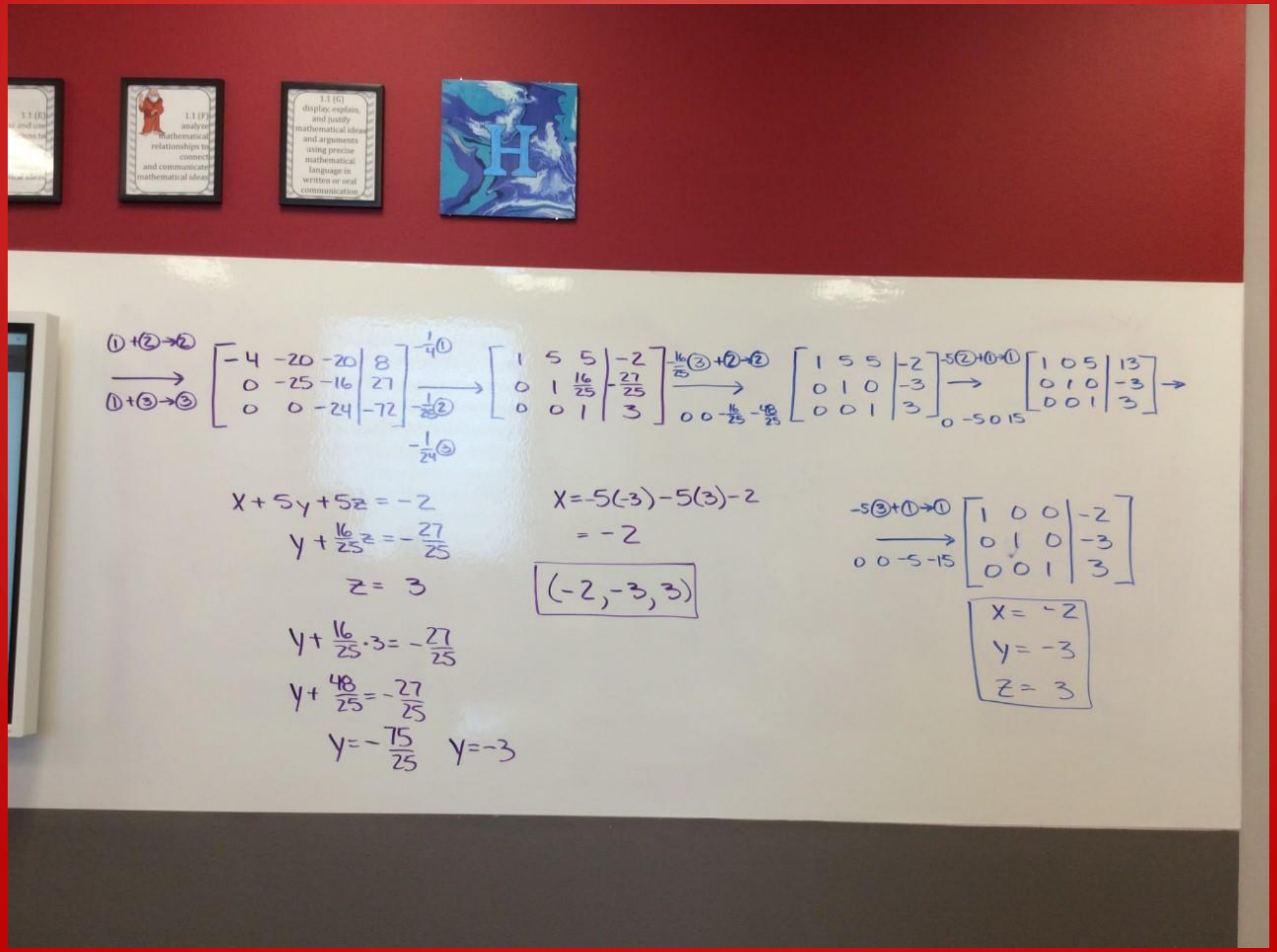
WHAT WE NEED:

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

I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

- Matrix


Goal for Gaussian
$\begin{bmatrix} 1 & \# & \# & \# \\ 0 & 1 & \# & \# \\ 0 & 0 & 1 & \# \end{bmatrix}$
Goal Gauss-Jordan
$\begin{bmatrix} 1 & 0 & 0 & \# \\ 0 & 1 & 0 & \# \\ 0 & 0 & 1 & \# \end{bmatrix}$
$\begin{cases} -x - 5y - 5z = 2 \\ 4x - 5y + 4z = 19 \\ x + 5y - z = -20 \end{cases}$
$\begin{bmatrix} -1 & -5 & -5 & 2 \\ 4 & -5 & 4 & 19 \\ 1 & 5 & -1 & -20 \end{bmatrix}$
4①
4③
$\begin{bmatrix} -4 & -20 & -20 & 8 \\ 4 & -5 & 4 & 19 \\ 4 & 20 & -4 & -80 \end{bmatrix}$
1
0
0


1.1 (F) analyze mathematical relationships to connect and communicate mathematical ideas
1.1 (G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication
H
$\begin{bmatrix} -4 & -20 & -20 & 8 \\ 0 & -25 & -16 & 27 \\ 0 & 0 & -24 & -72 \end{bmatrix}$
$\begin{bmatrix} 1 & 5 & 5 & -2 \\ 0 & 1 & \frac{16}{25} & -\frac{27}{25} \\ 0 & 0 & 1 & 3 \end{bmatrix}$
$\begin{bmatrix} 1 & 5 & 5 & -2 \\ 0 & 1 & 0 & -3 \\ 0 & 0 & 1 & 3 \end{bmatrix}$
$\begin{bmatrix} 1 & 0 & 5 & 13 \\ 0 & 1 & 0 & -3 \\ 0 & 0 & 1 & 3 \end{bmatrix}$
$x + 5y + 5z = -2$
$y + \frac{16}{25}z = -\frac{27}{25}$
$z = 3$
$y + \frac{16}{25} \cdot 3 = -\frac{27}{25}$
$y + \frac{48}{25} = -\frac{27}{25}$
$y = -\frac{75}{25}$ $y = -3$
$x = -5(-3) - 5(3) - 2$
$= -2$
$(-2, -3, 3)$
$\begin{bmatrix} 1 & 0 & 0 & -2 \\ 0 & 1 & 0 & -3 \\ 0 & 0 & 1 & 3 \end{bmatrix}$
$x = -2$
$y = -3$
$z = 3$

$$\begin{cases} -x-5y-5z=2 \\ 4x-5y+4z=19 \\ x+5y-z=-20 \end{cases}$$

* GAUSSIAN

1) $\left[\begin{array}{ccc|c} -1 & -5 & -5 & 2 \\ 4 & -5 & 4 & 19 \\ 1 & 5 & -1 & -20 \end{array}\right]$

2) $\left[\begin{array}{ccc|c} 1 & -\frac{5}{4} & 1 & \frac{19}{4} \\ 0 & 1 & \frac{16}{25} & -\frac{27}{25} \\ 0 & 0 & 1 & 3 \end{array}\right]$

3) $x-\frac{5}{4}y+z=\frac{19}{4}$

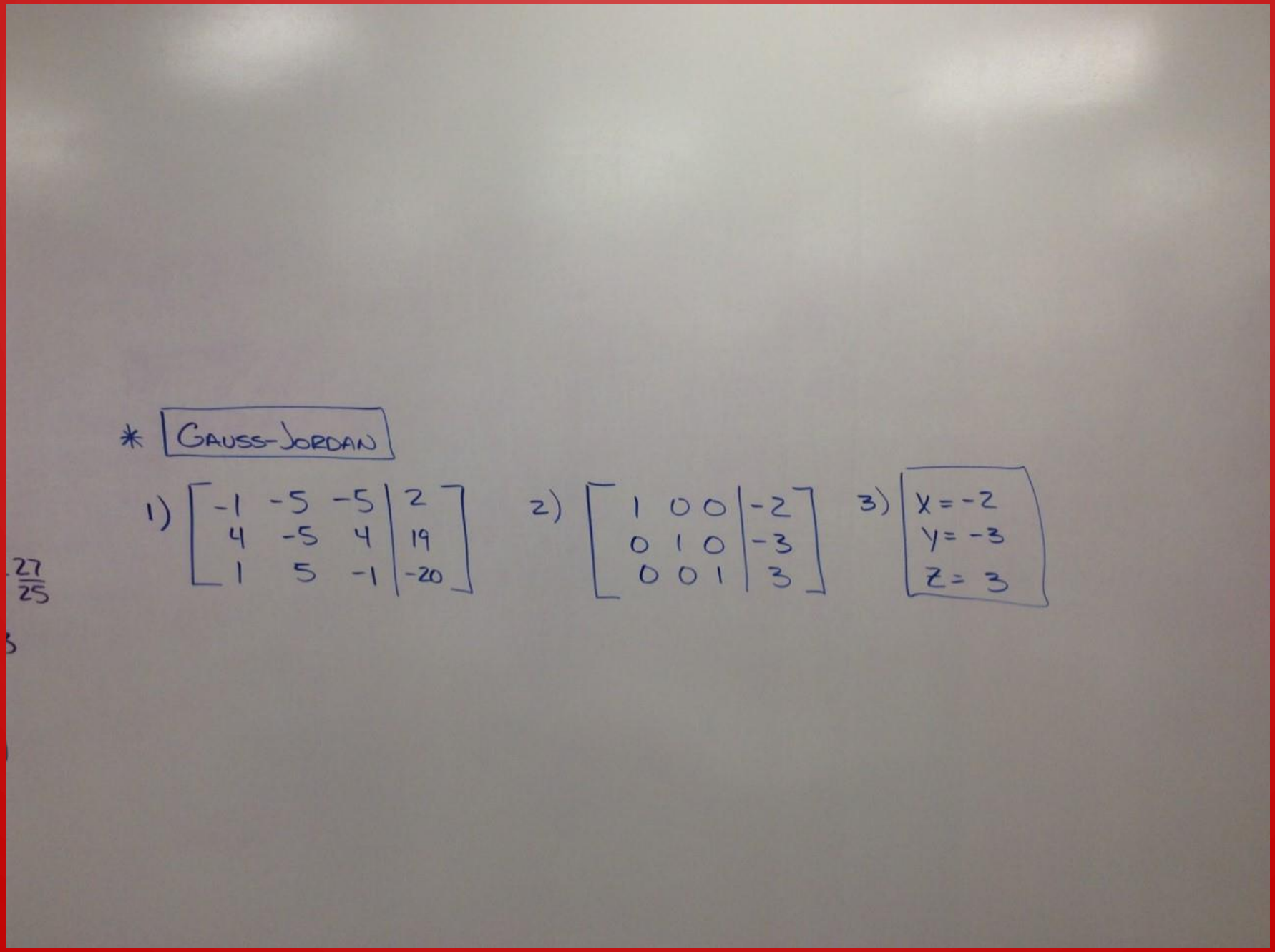
$y+\frac{16}{25}z=-\frac{27}{25}$

$z=3$

4) $(-2,-3,3)$

* GAUSS-

1) $\left[\begin{array}{c} -1 \\ 4 \\ 1 \end{array}\right.$


* GAUSS-JORDAN
1) $\left[\begin{array}{ccc|c} -1 & -5 & -5 & 2 \\ 4 & -5 & 4 & 19 \\ 1 & 5 & -1 & -20 \end{array}\right]$
2) $\left[\begin{array}{ccc|c} 1 & 0 & 0 & -2 \\ 0 & 1 & 0 & -3 \\ 0 & 0 & 1 & 3 \end{array}\right]$
3) $x = -2$
$y = -3$
$z = 3$
$\frac{27}{25}$