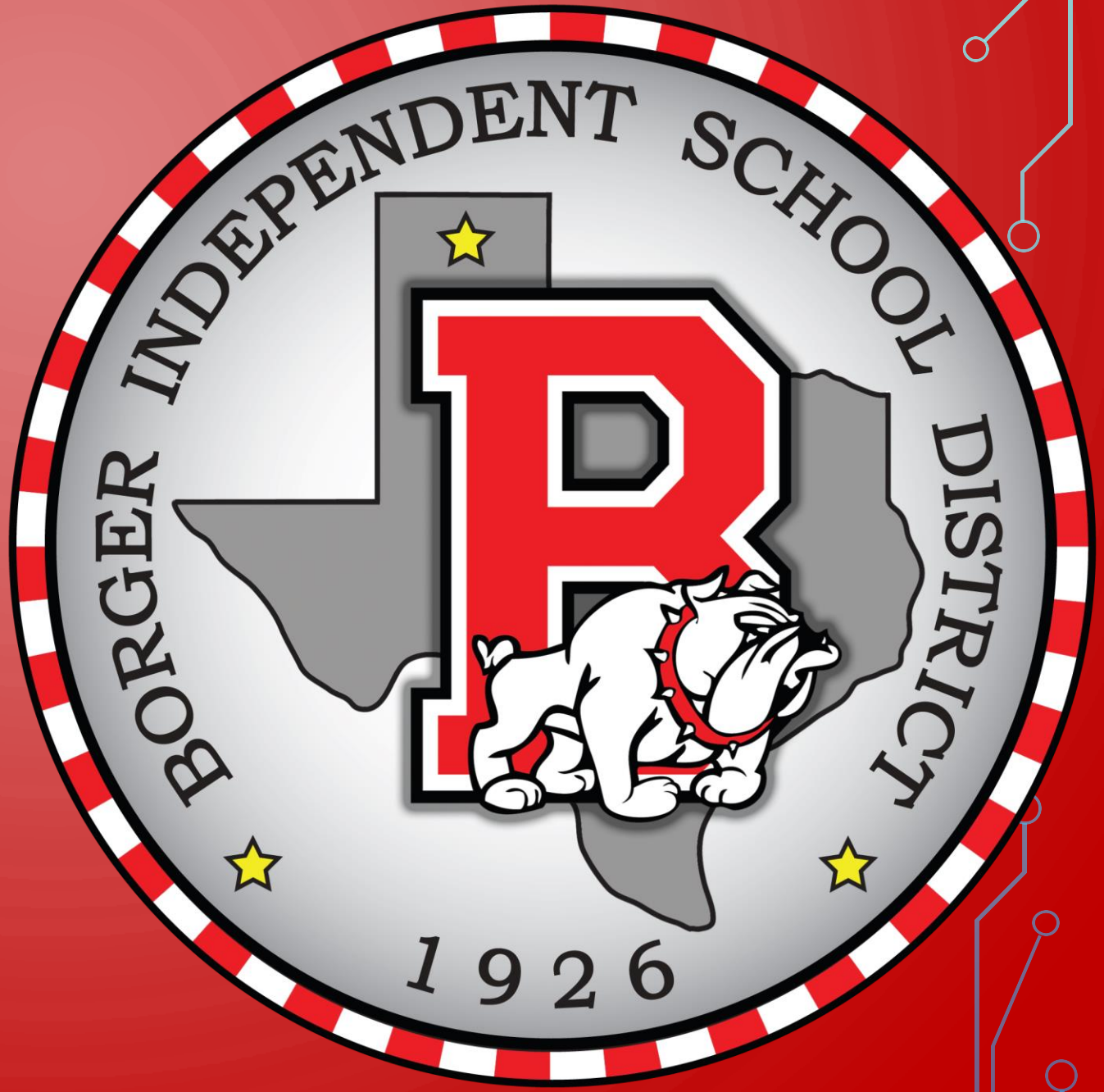
BOARD NOTES

13 NOVEMBER 2019



2A.3 (A) formulate systems of equations, including systems consisting of three linear equations in three variables and systems consisting of two equations, the first linear and the second quadratic;

We will be able to determine if a system of equations is consistent or inconsistent.

WHAT WE NEED:

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

I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

- System of Equations

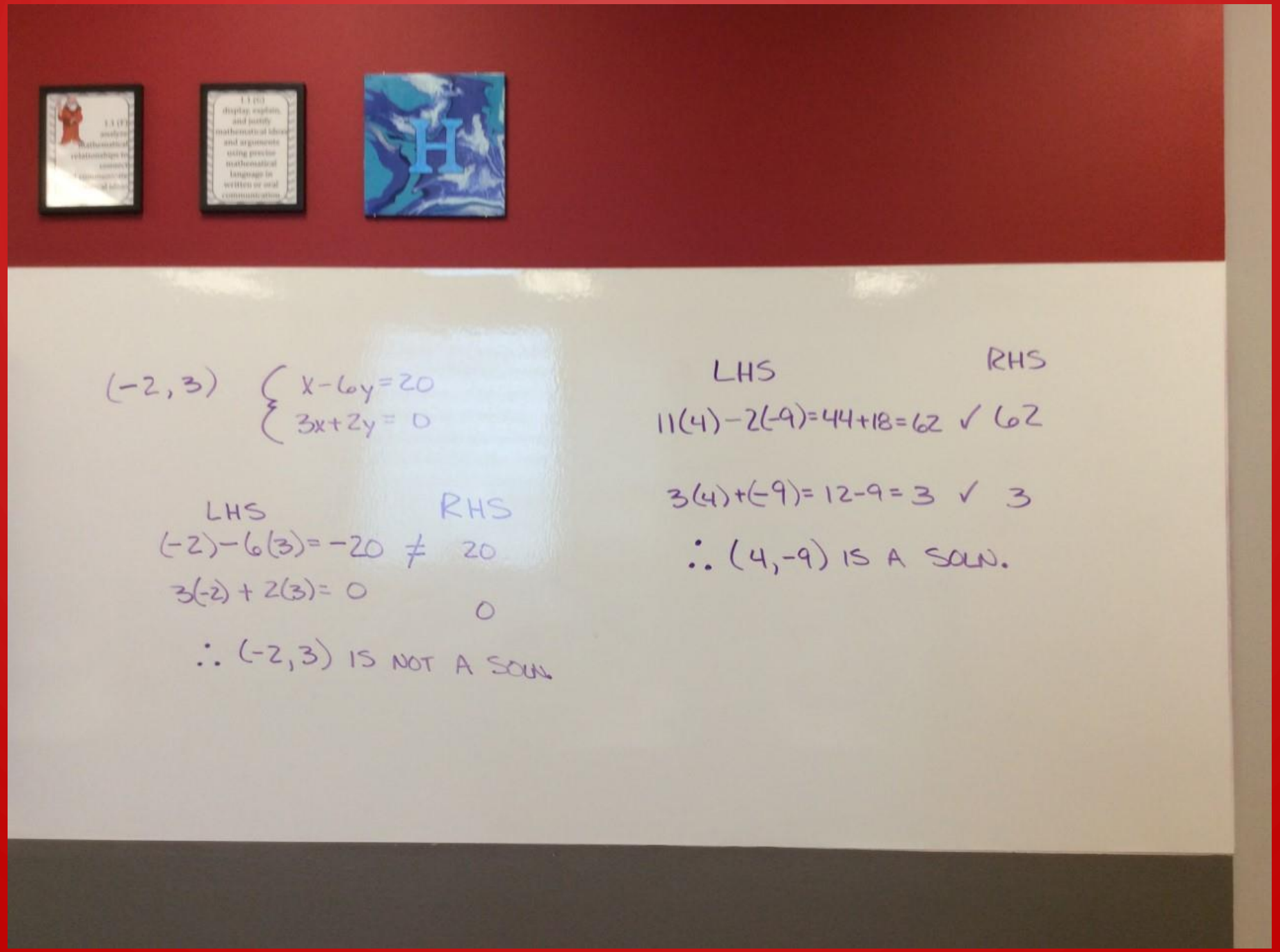
All equations in the form $Ax + By = C$ are straight lines when graphed. Two such equations are called a **system of linear equations** or a **linear system**. **A solution to a system of linear equations in two variables** is an ordered pair that satisfies both equations in the system.

A linear system that has at least one solution is called a **consistent system**.

A linear system with no solution is called an **inconsistent system**.

1. Solve either of the equations for one variable in terms of the other. (If one of the equations is already in this form, you can skip this step.)
2. Substitute the expression found in step 1 into the **other** equation. This will result in an equation in one variable.
3. Solve the equation containing one variable.
4. Back-substitute the value found in step 3 into one of the original equations. Simplify and find the value of the remaining variable.
5. Check the proposed solution in both of the system's given equations.

1. If necessary, rewrite both equations in the form $Ax + By = C$.
2. If necessary, multiply either equation or both equations by appropriate nonzero numbers so that the sum of the x-coefficients or the sum of the y-coefficients is 0.
3. Add the equations in step 2. The sum is an equation in one variable.
4. Solve the equation in one variable.
5. Back-substitute the value obtained in step 4 into either of the given equations and solve for the other variable.
6. Check the solution in both of the original equations.

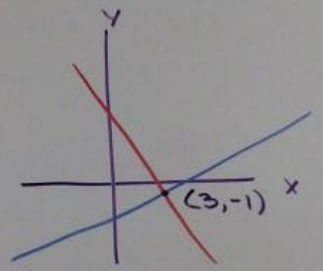

H
$(-2,3)$ $\begin{cases} x-6y=20 \\ 3x+2y=0 \end{cases}$
LHS RHS
$(-2)-6(3)=-20 \neq 20$
$3(-2)+2(3)=0$ 0
$\therefore (-2,3)$ IS NOT A SOLN.
LHS RHS
$11(4)-2(-9)=44+18=62$ ✓ 62
$3(4)+(-9)=12-9=3$ ✓ 3
$\therefore (4,-9)$ IS A SOLN.

① $x - 2y = 5$

② $4x + 3y = 9$

Solve both eq for y

$(3, -1)$



RHS LHS

5 ✓ $3 - 2(-1) = 3 + 2 = 5$

9 ✓ $4(3) + 3(-1) = 12 - 3 = 9$

① $x - 2y = 5$

$-2y = 5 - x$

$y = \frac{5 - x}{-2}$

② $4x + 3y = 9$

$3y = 9 - 4x$

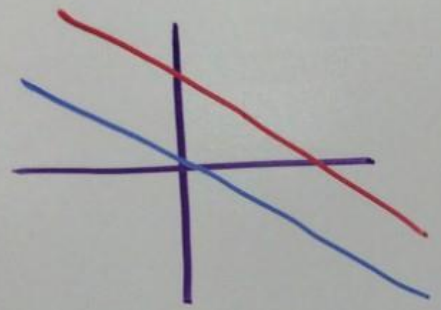
$y = \frac{9 - 4x}{3}$

$(-3.077, -\frac{37}{13})$

RHS LHS

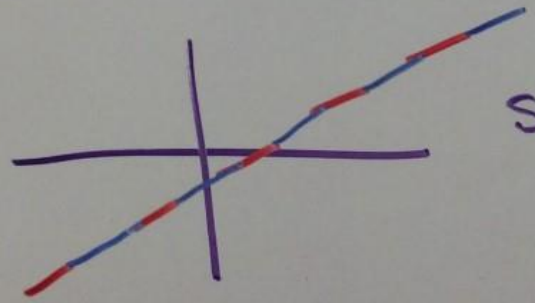
$-32 \quad 3(-3.077)+8(-\frac{37}{13})=-32.$

$-22 \quad 9(-3.077)-2(-\frac{37}{13})=-22.$



PARALLEL LINE

NO SOLUTION



SAME LINE

∞ SOLUTIONS