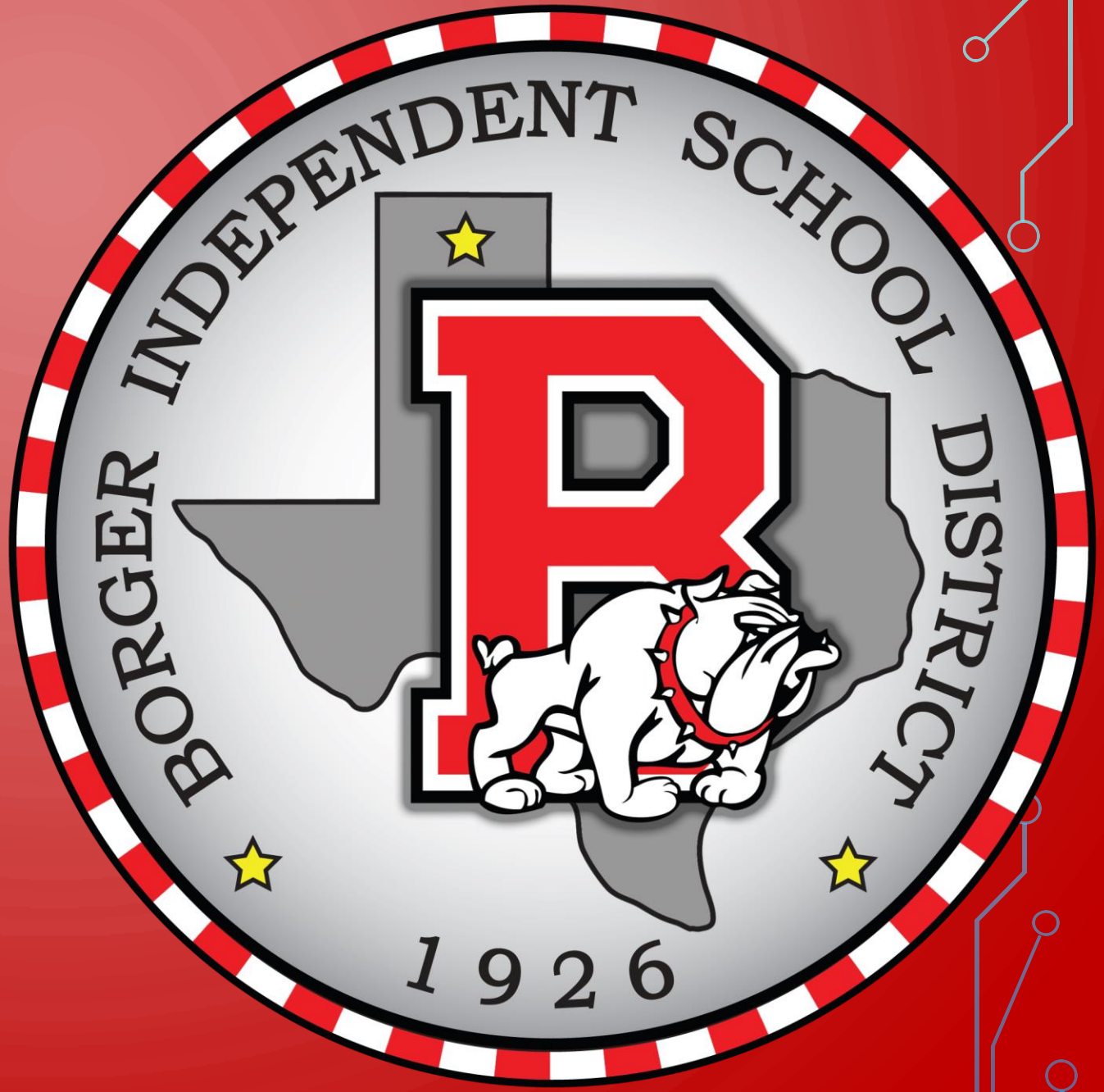
BOARD NOTES

4 DECEMBER 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:

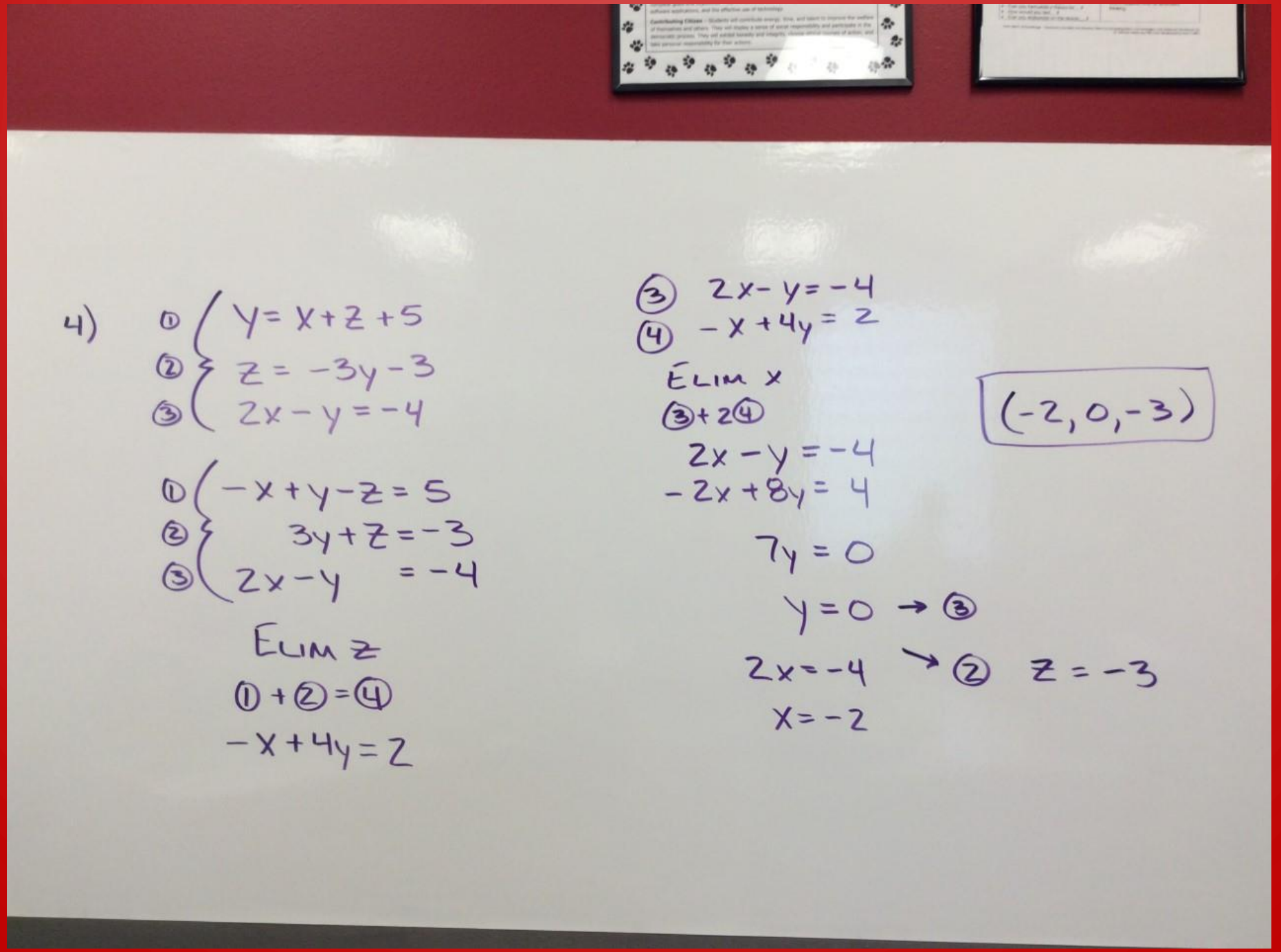
- TI-84
- Definition:
  - Consistent
  - Inconsistent
- Solve for a variable

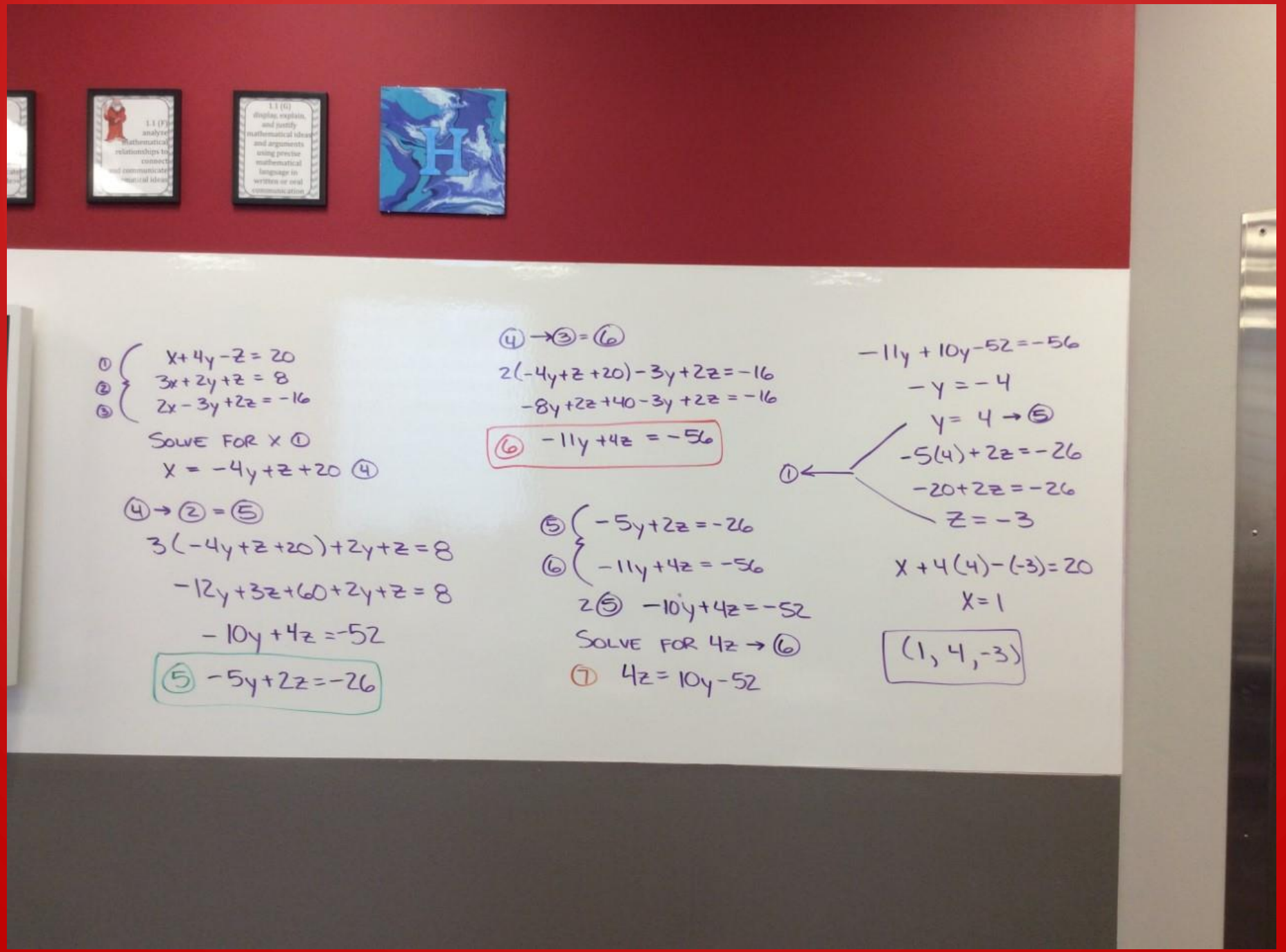
I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

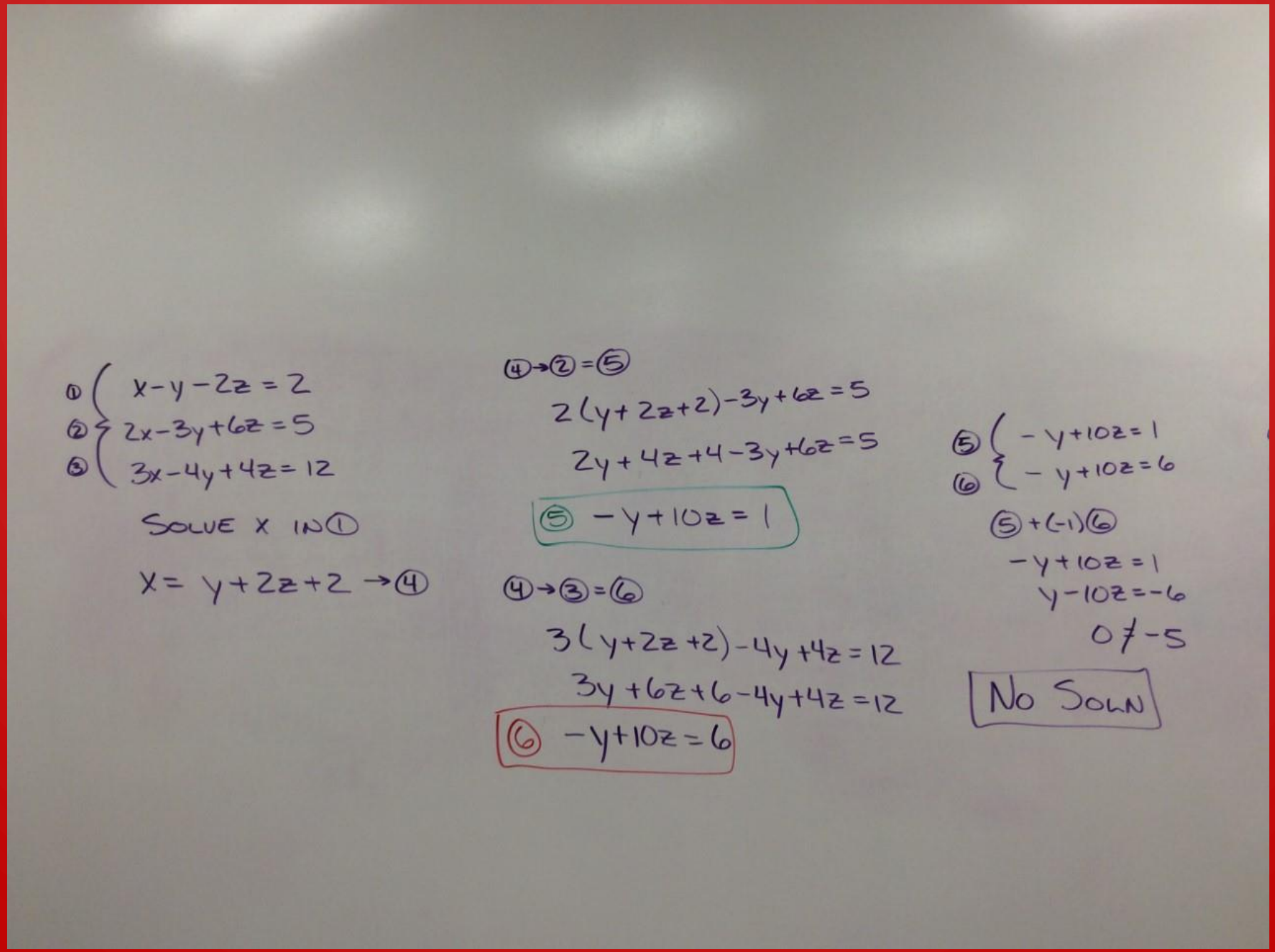
- System of Equations

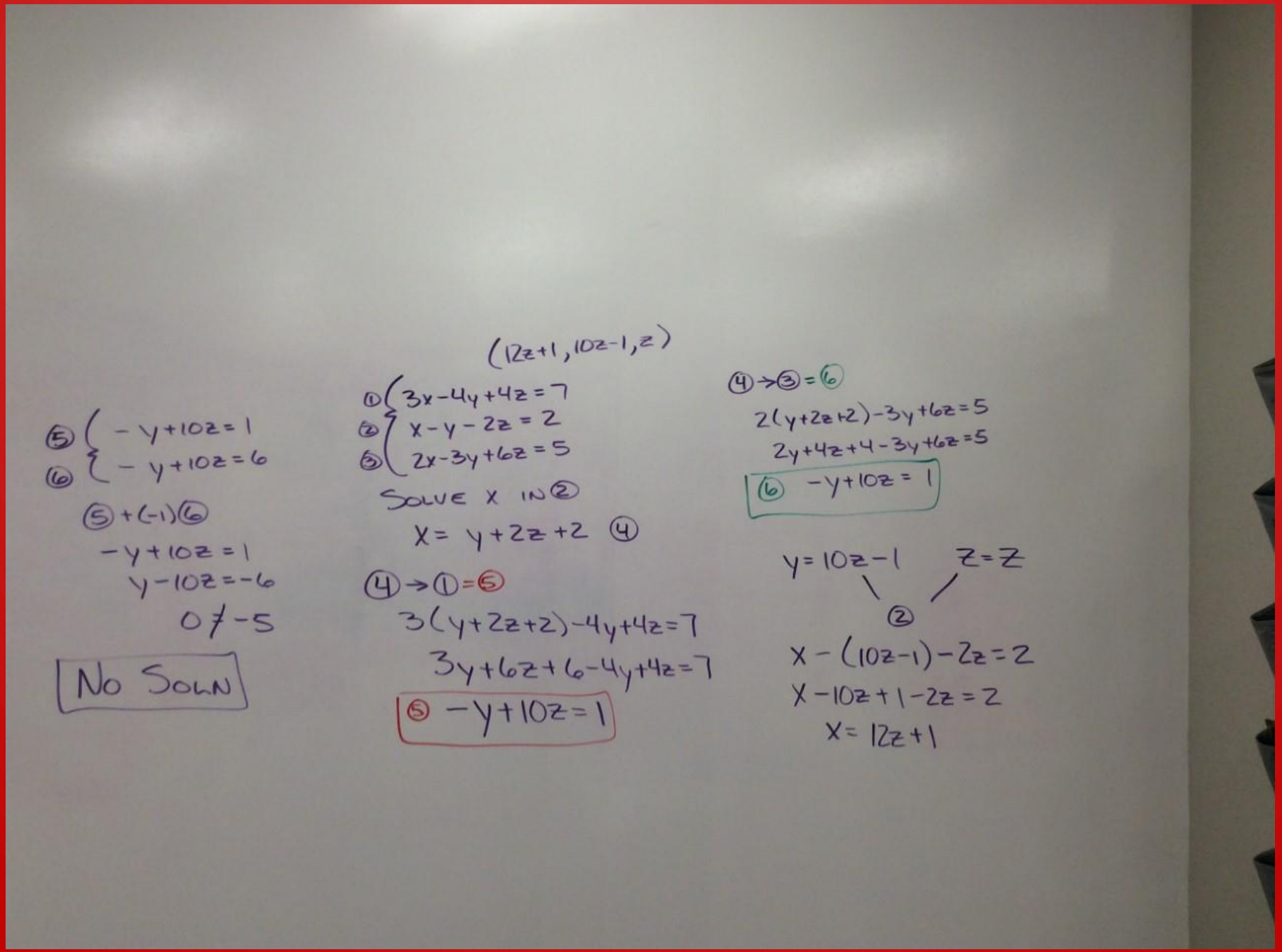
In general, any equation of the form $Ax + By + Cz = D$ where A, B, C, and D are real numbers such that A, B, and C are not all 0, is a **linear equation in three variables, *x*, *y*, and *z***.

A **solution** of a system of linear equations in three variables is an ordered triple of real numbers that satisfies all equations of the system. The **solution set** of the system is the set of all its solutions.


4)
① y = x + z + 5
② z = −3y − 3
③ 2x − y = −4
① −x + y − z = 5
② 3y + z = −3
③ 2x − y = −4
Elim z
① + ② = ④
−x + 4y = 2
③ 2x − y = −4
④ −x + 4y = 2
Elim x
③ + 2④
2x − y = −4
−2x + 8y = 4
7y = 0
y = 0 → ③
2x = −4 → ② z = −3
x = −2
(−2, 0, −3)


① x + 4y − z = 20
② 3x + 2y + z = 8
③ 2x − 3y + 2z = −16
Solve for x ①
x = −4y + z + 20 ④
④ → ② = ⑤
3(−4y + z + 20) + 2y + z = 8
−12y + 3z + 60 + 2y + z = 8
−10y + 4z = −52
⑤ −5y + 2z = −26
④ → ③ = ⑥
2(−4y + z + 20) − 3y + 2z = −16
−8y + 2z + 40 − 3y + 2z = −16
⑥ −11y + 4z = −56
⑤ −5y + 2z = −26
⑥ −11y + 4z = −56
2⑤ −10y + 4z = −52
Solve for 4z → ⑥
⑦ 4z = 10y − 52
−11y + 10y − 52 = −56
−y = −4
y = 4 → ⑤
−5(4) + 2z = −26
−20 + 2z = −26
z = −3
① ←
x + 4(4) − (−3) = 20
x = 1
(1, 4, −3)


① x − y − 2z = 2
② 2x − 3y + 6z = 5
③ 3x − 4y + 4z = 12
SOLVE x IN ①
x = y + 2z + 2 → ④
④ → ② = ⑤
2(y + 2z + 2) − 3y + 6z = 5
2y + 4z + 4 − 3y + 6z = 5
⑤ −y + 10z = 1
④ → ③ = ⑥
3(y + 2z + 2) − 4y + 4z = 12
3y + 6z + 6 − 4y + 4z = 12
⑥ −y + 10z = 6
⑤ −y + 10z = 1
⑥ −y + 10z = 6
⑤ + (−1)⑥
−y + 10z = 1
y − 10z = −6
0 ≠ −5
No Soln


(12z+1, 10z-1, z)
⑤ -y+10z=1
⑥ -y+10z=6
⑤+(-1)⑥
-y+10z=1
y-10z=-6
0≠-5
No Soln
① 3x-4y+4z=7
② x-y-2z=2
③ 2x-3y+6z=5
Solve x in ②
x=y+2z+2 ④
④→①=⑤
3(y+2z+2)-4y+4z=7
3y+6z+6-4y+4z=7
⑤ -y+10z=1
④→③=⑥
2(y+2z+2)-3y+6z=5
2y+4z+4-3y+6z=5
⑥ -y+10z=1
y=10z-1
z=z
②
x-(10z-1)-2z=2
x-10z+1-2z=2
x=12z+1