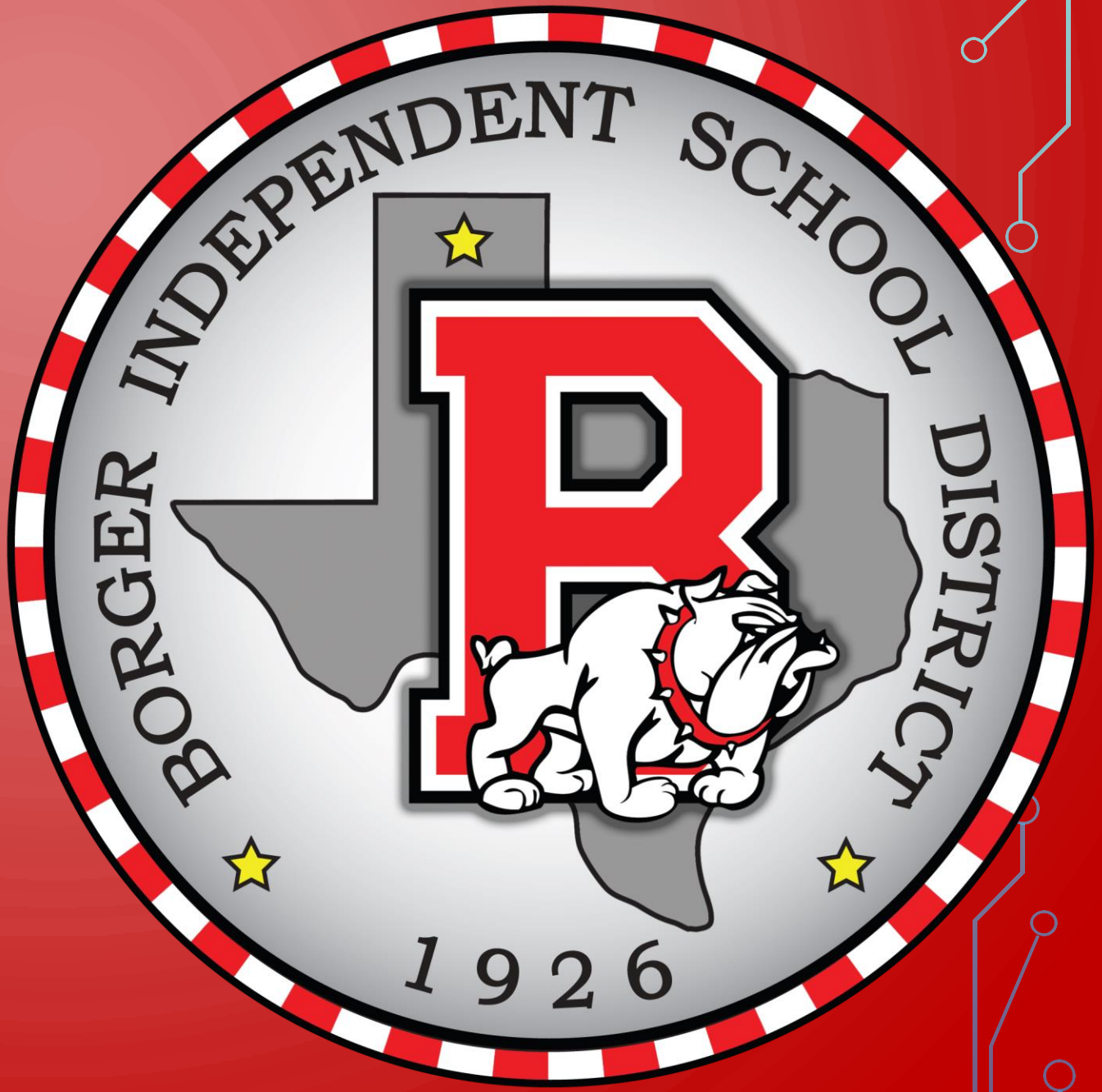
BOARD NOTES

5 MARCH 2020



2A.7 (A) add, subtract, and multiply complex numbers;

We will be able to determine what type of factors a quadratic equation has.

WHAT WE NEED:

- TI-84
- Definition of imaginary

I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

- Equation

The Discriminant

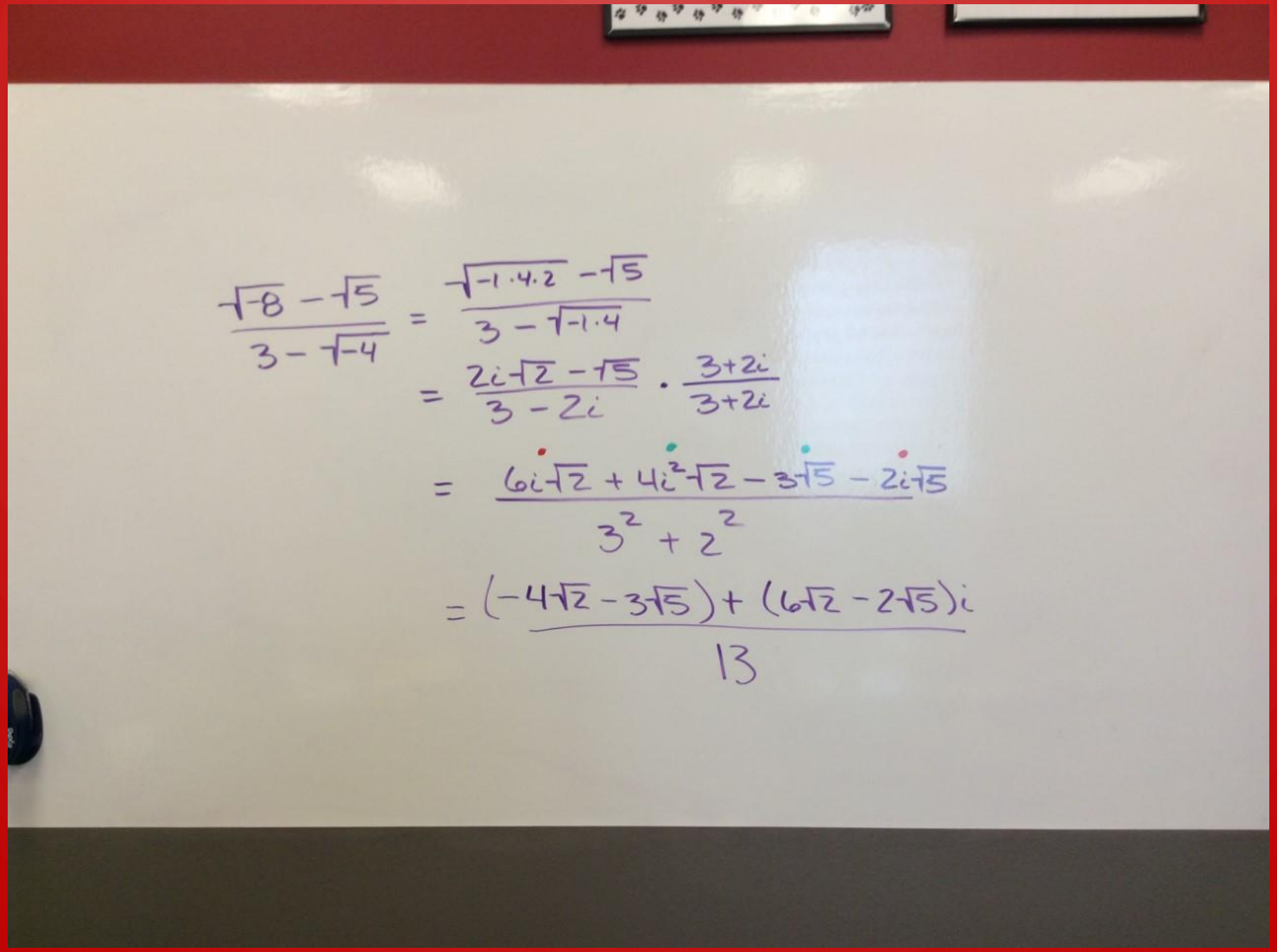
We can find the solution for a quadratic equation of the form $ax^2 + bx + c = 0$ using the quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}.$$

The **discriminant** is the quantity $b^2 - 4ac$ which appears under the radical sign in the quadratic formula.

The **discriminant** of the quadratic equation determines the number and type of solutions.

- If the discriminant is positive, there will be two unequal real solutions.
- If the discriminant is zero, there is one real (repeated) solution.
- If the discriminant is negative, there are two imaginary solutions.

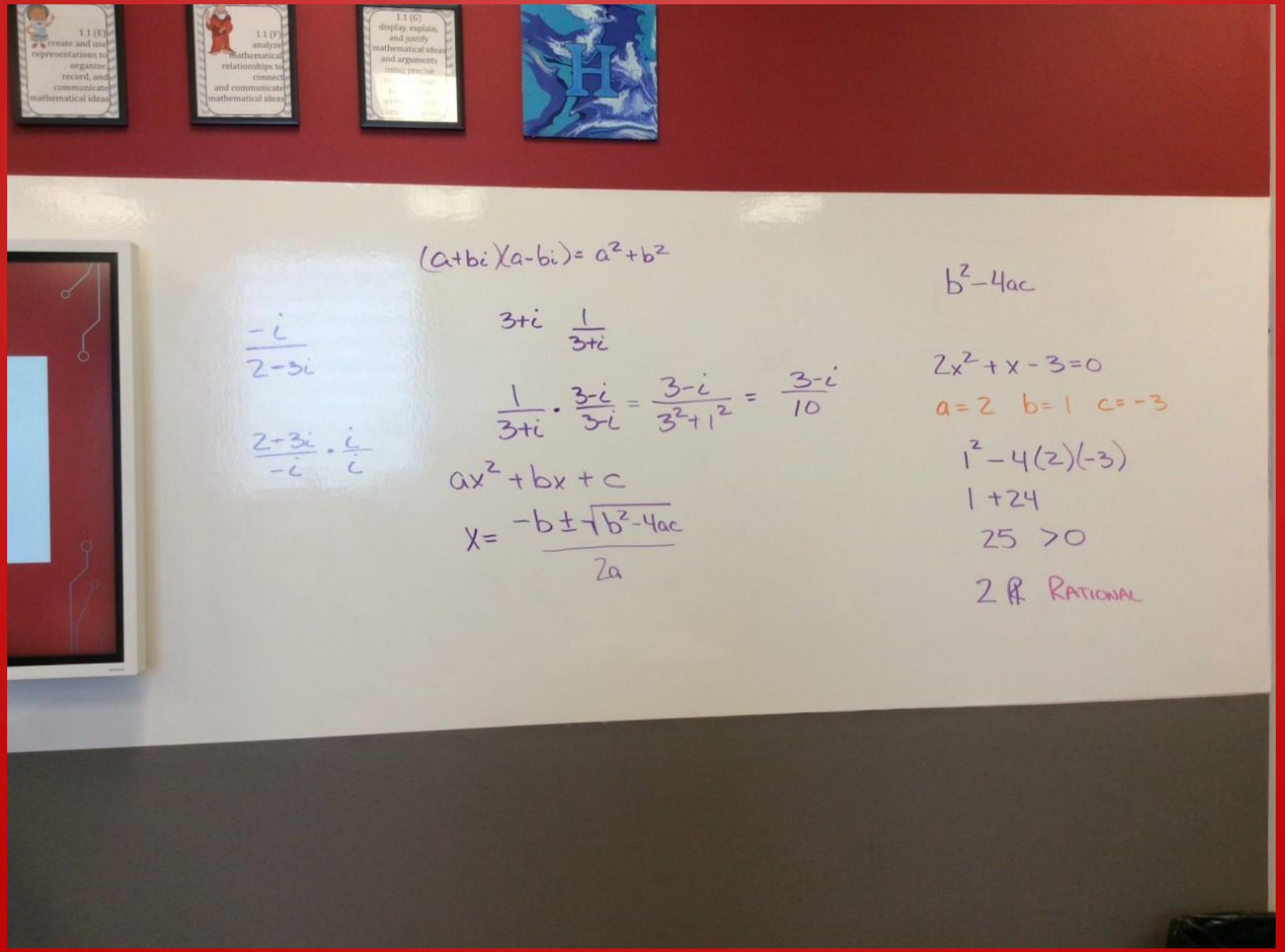


$$\frac{\sqrt{-8}-\sqrt{5}}{3-\sqrt{-4}} = \frac{\sqrt{-1\cdot 4\cdot 2}-\sqrt{5}}{3-\sqrt{-1\cdot 4}}$$

$$= \frac{2i\sqrt{2}-\sqrt{5}}{3-2i}\cdot\frac{3+2i}{3+2i}$$

$$= \frac{6i\sqrt{2}+4i^2\sqrt{2}-3\sqrt{5}-2i\sqrt{5}}{3^2+2^2}$$

$$= \frac{(-4\sqrt{2}-3\sqrt{5})+(6\sqrt{2}-2\sqrt{5})i}{13}$$


1.1 (E) create and use representations to organize, record, and communicate mathematical ideas
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
H
$(a+bi)(a-bi)=a^2+b^2$
$\frac{-i}{2-3i}$
$\frac{2+3i}{-i}\cdot\frac{i}{i}$
$3+i \quad \frac{1}{3+i}$
$\frac{1}{3+i}\cdot\frac{3-i}{3-i}=\frac{3-i}{3^2+1^2}=\frac{3-i}{10}$
ax^2+bx+c
$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$
b^2-4ac
$2x^2+x-3=0$
$a=2 \quad b=1 \quad c=-3$
$1^2-4(2)(-3)$
$1+24$
$25>0$
2 R. RATIONAL

$x^2 + 8 = x$

$x^2 - x + 8 = 0$

$a = 1 \quad b = -1 \quad c = 8$

$(-1)^2 - 4(1)(8)$

$1 - 32 = -31 < 0$

2 C

$6 - 2x^2 = 8x + 14$

$-2x^2 - 8x - 8 = 0$

$0 = 2x^2 + 8x + 8$

$a = -2 \quad b = -8 \quad c = -8$

OR

$a = 2 \quad b = 8 \quad c = 8$

$(-8)^2 - 4(-2)(-8)$

$64 - 64 = 0$

1 R

$a = 2 \quad b = -10 \quad c = -5$

$b^2 - 4ac = 140 > 0$

2 R IRRATIONAL