BOARD NOTES

8 OCTOBER 2019

2A.2 (B) graph and write the inverse of a function using notation such as $f^{-1}(x)$;
2A.2 (C) describe and analyze the relationship between a function and its inverse (quadratic and square root, logarithmic and exponential), including the restriction(s) on domain, which will restrict its range;

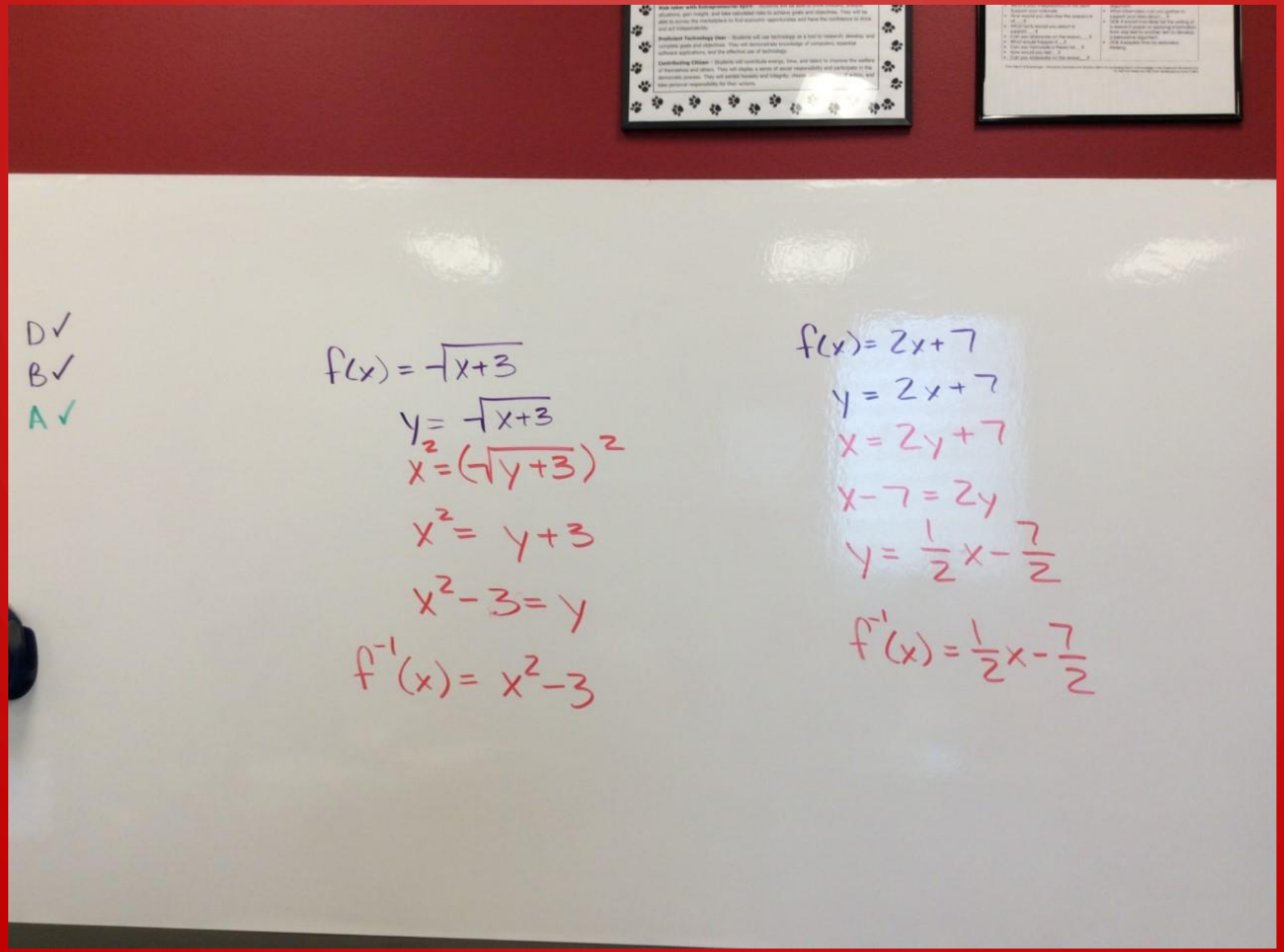
We will be able to determine the inverse of an equation without graphing.

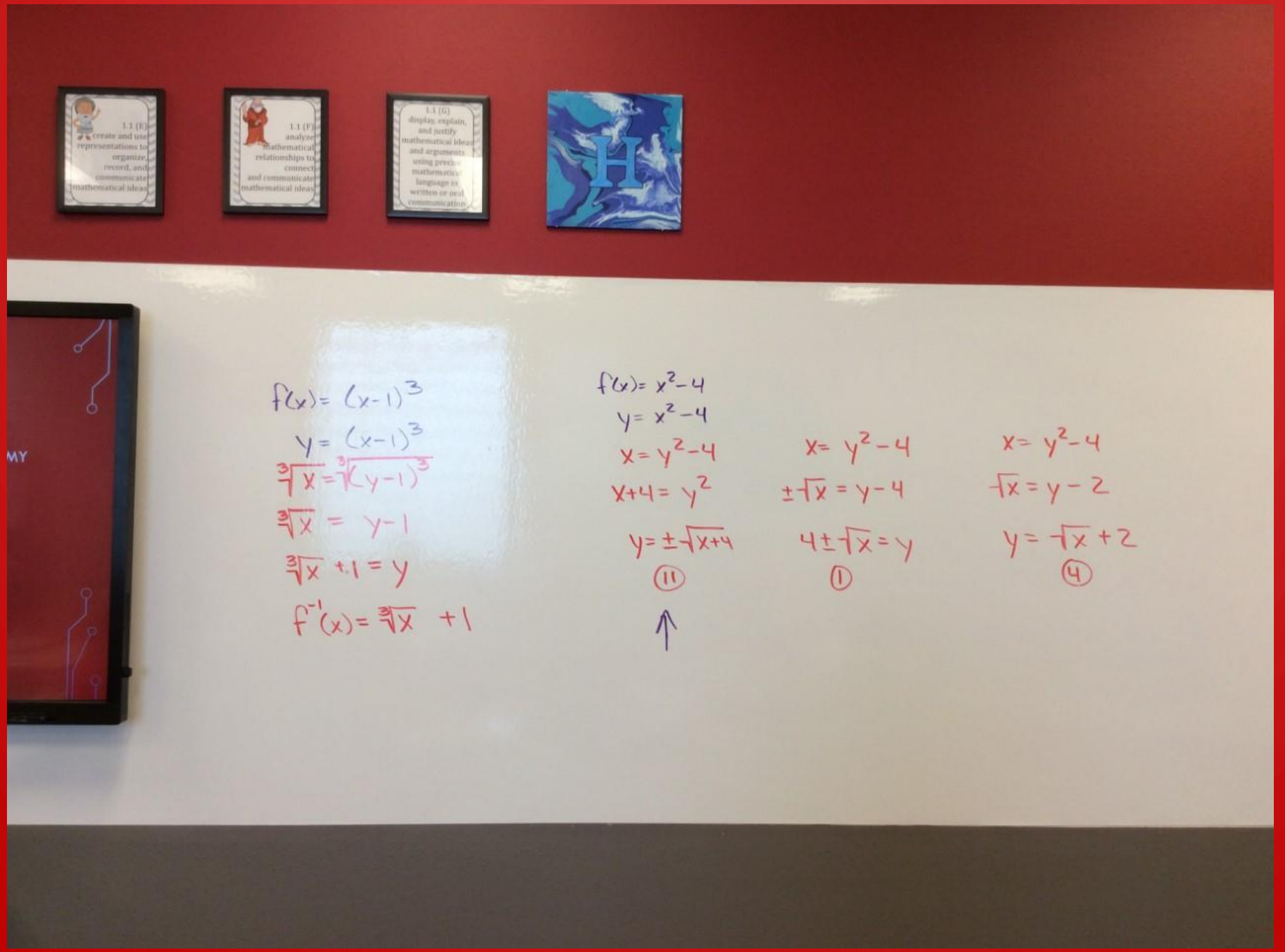
WHAT WE NEED:

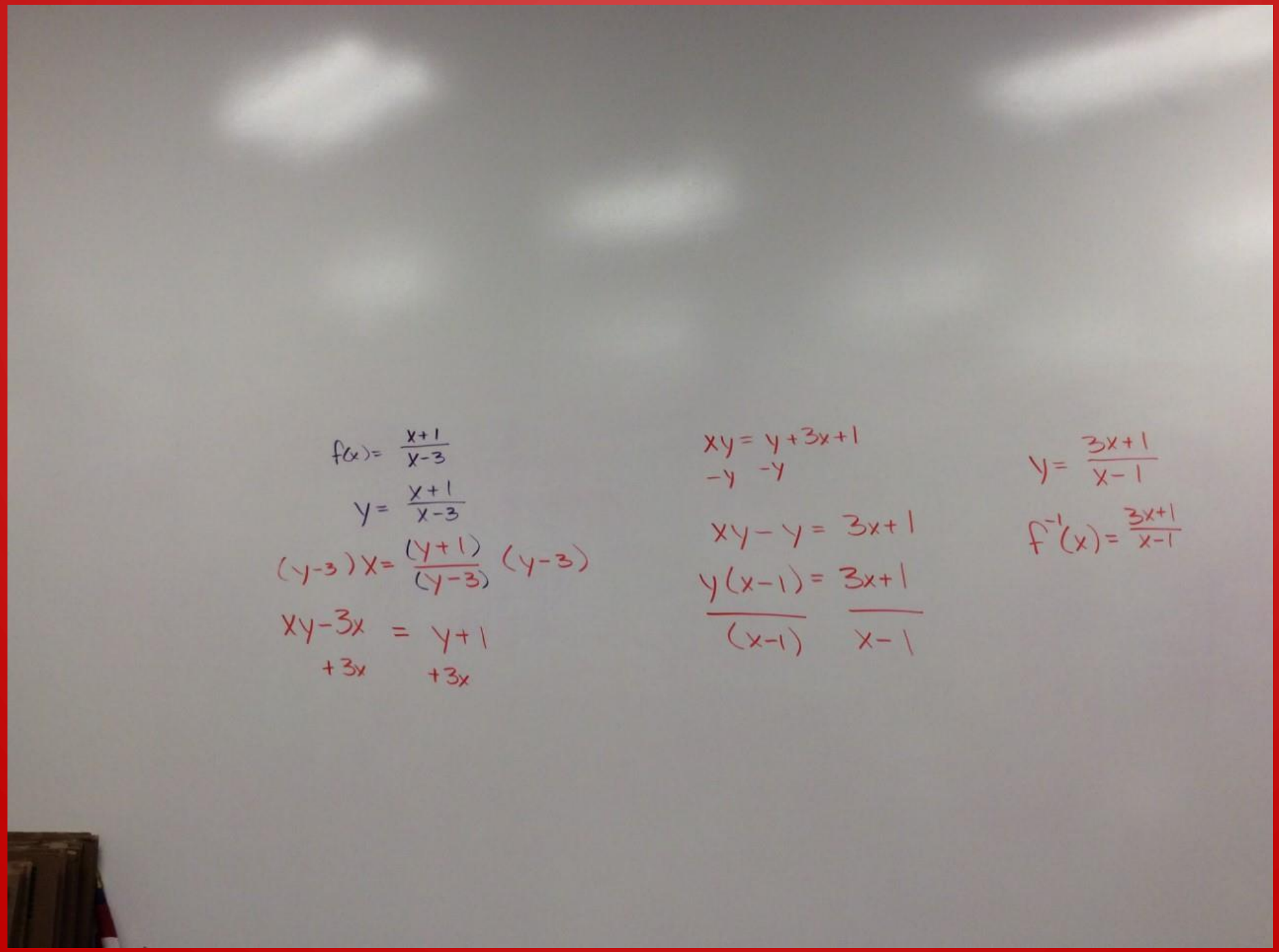
- TI – 84
- VLT
- HLT

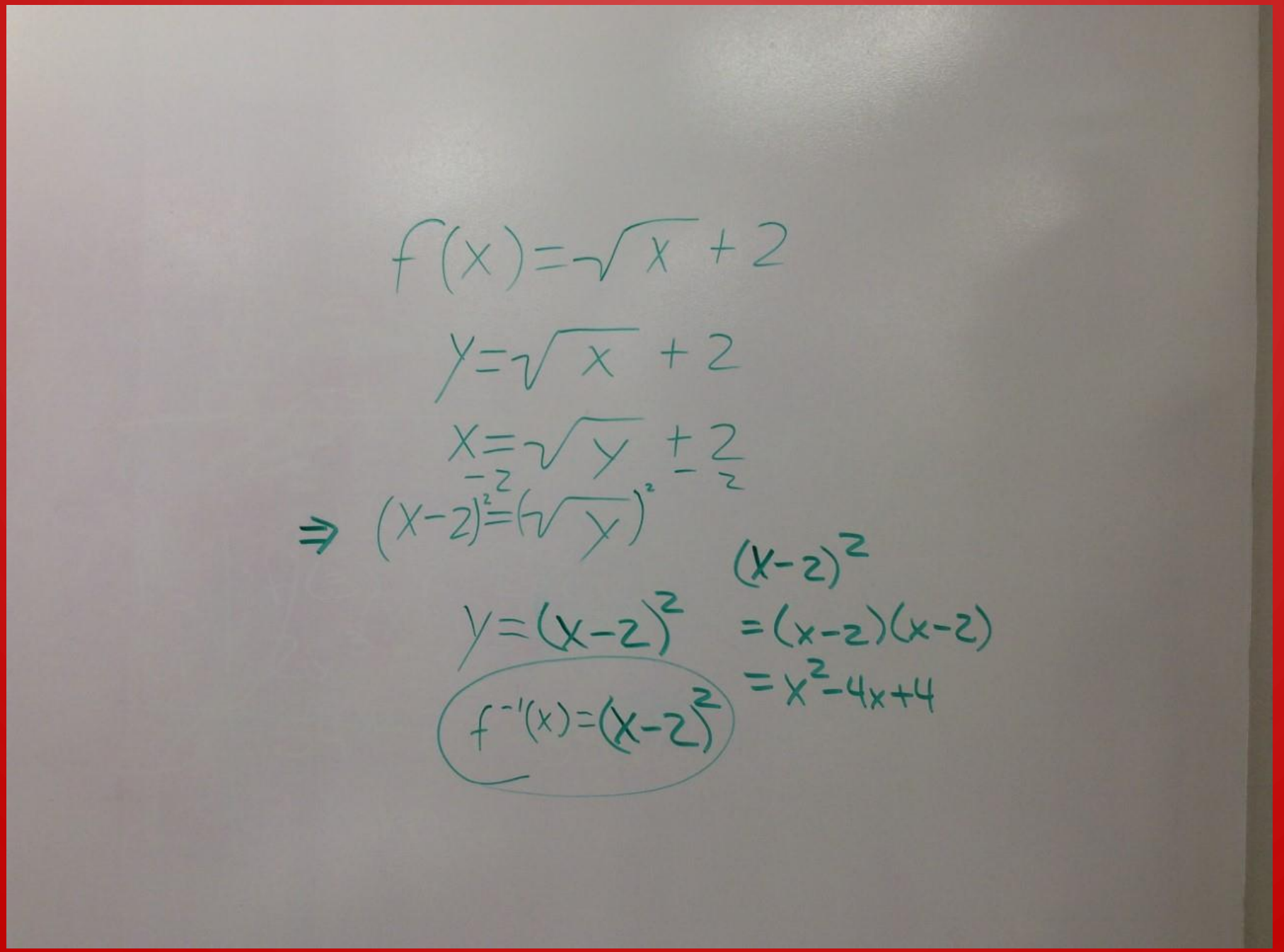
I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

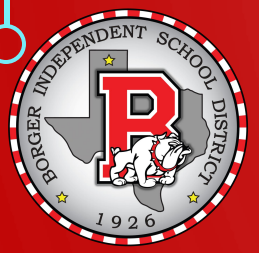
- Equation
  - Change f(x) to y
  - Swap x and y
  - Solve for y


D ✓
B ✓
A ✓
$f(x) = -\sqrt{x+3}$
$y = -\sqrt{x+3}$
$x = (-\sqrt{y+3})^2$
$x^2 = y+3$
$x^2 - 3 = y$
$f^{-1}(x) = x^2 - 3$
$f(x) = 2x+7$
$y = 2x+7$
$x = 2y+7$
$x-7 = 2y$
$y = \frac{1}{2}x - \frac{7}{2}$
$f^{-1}(x) = \frac{1}{2}x - \frac{7}{2}$


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 mathematical language in written or oral communication
H
$f(x) = (x-1)^3$
$y = (x-1)^3$
$\sqrt[3]{x} = \sqrt[3]{(y-1)^3}$
$\sqrt[3]{x} = y-1$
$\sqrt[3]{x} + 1 = y$
$f^{-1}(x) = \sqrt[3]{x} + 1$
$f(x) = x^2 - 4$
$y = x^2 - 4$
$x = y^2 - 4$
$x + 4 = y^2$
$y = \pm\sqrt{x+4}$
(11)
$x = y^2 - 4$
$\pm\sqrt{x} = y - 4$
$4 \pm \sqrt{x} = y$
(1)
$x = y^2 - 4$
$\sqrt{x} = y - 2$
$y = \sqrt{x} + 2$
(4)


$f(x) = \frac{x+1}{x-3}$
$y = \frac{x+1}{x-3}$
$(y-3)x = \frac{(y+1)}{(y-3)}(y-3)$
$xy - 3x = y + 1$
$+3x \quad +3x$
$xy = y + 3x + 1$
$-y \quad -y$
$xy - y = 3x + 1$
$\frac{y(x-1)}{(x-1)} = \frac{3x+1}{x-1}$
$y = \frac{3x+1}{x-1}$
$f^{-1}(x) = \frac{3x+1}{x-1}$


$f(x) = \sqrt{x} + 2$
$y = \sqrt{x} + 2$
$x = \sqrt{y} + 2$
$-2 \quad -2$
$\Rightarrow (x-2)^2 = (\sqrt{y})^2$
$y = (x-2)^2$
$f^{-1}(x) = (x-2)^2$
$(x-2)^2$
$= (x-2)(x-2)$
$= x^2 - 4x + 4$



$f(x) = (x-2)^2$

$x = (y-2)^2$

$\sqrt{x} = y-2$

$y = \pm\sqrt{x}+2$

$f(x) = -4x$

$y = -4x$

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

$f(x)^{-1} = -\frac{1}{4}x$

$$f(x)=(x+2)^3$$

$$y=(x+2)^3$$

$$x=(y+2)^3$$

$$\sqrt[3]{x}=\sqrt[3]{(y+2)^3}$$

$$\sqrt[3]{x}=y+2$$

$$-2 \quad -2$$

$$y=\sqrt[3]{x}-2$$