BOARD NOTES

22 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;
2A.2 (D) use the composition of two functions, including the necessary restrictions on the domain, to determine if the functions are inverses of each other.
2A.5 (C) rewrite exponential equations as their corresponding logarithmic equations and logarithmic equations as their corresponding exponential equations;

We will be able to use the composition of two functions, including the necessary restrictions on the domain, to determine if the functions are inverses of each other.

WHAT WE NEED:

- TI – 84
- VLT
- HLT

I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

- Equations

Operations and Composition of Functions

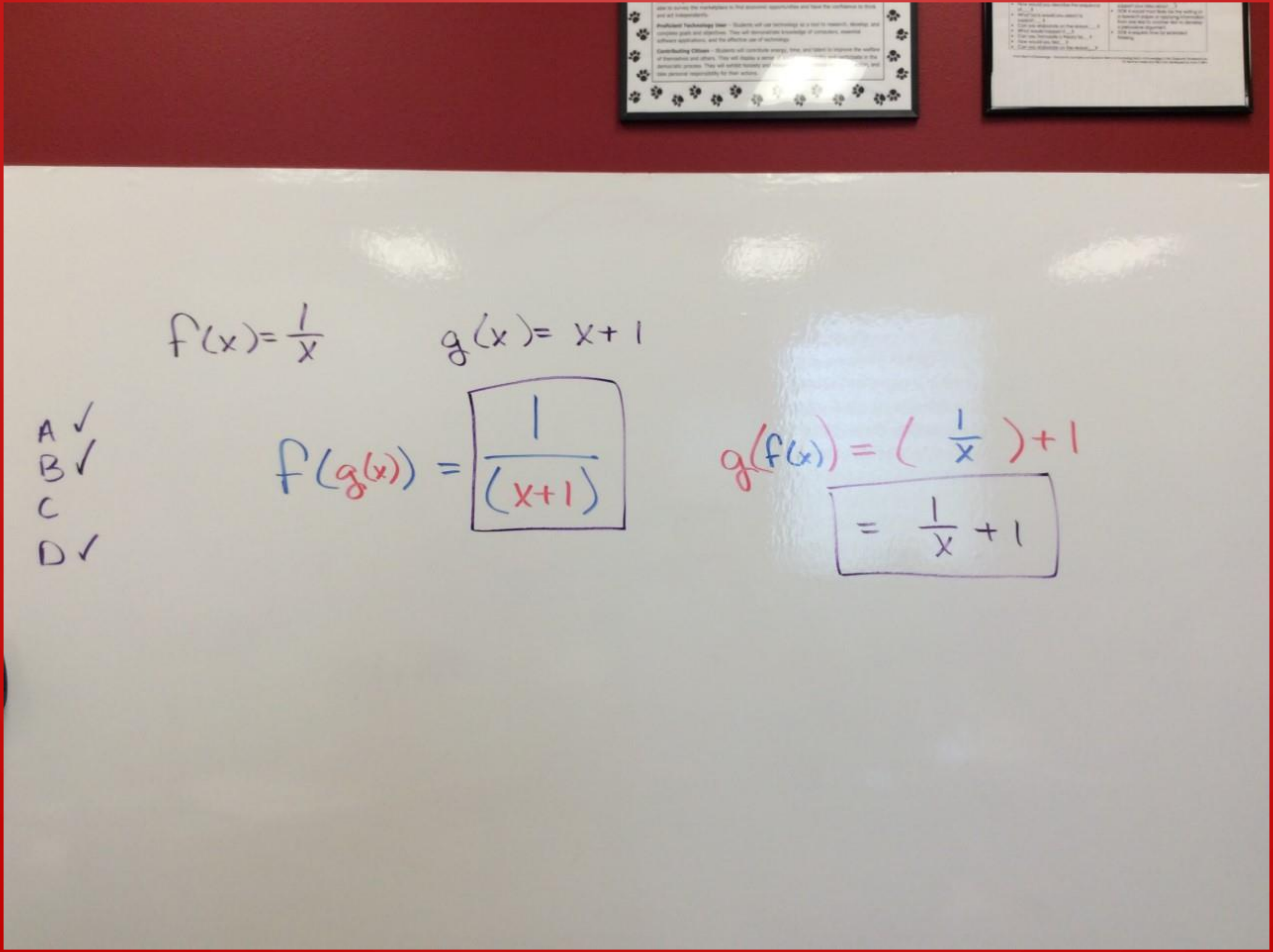
Sum: $(f+g)(x) = f(x) + g(x)$

Difference: $(f-g)(x) = f(x) - g(x)$

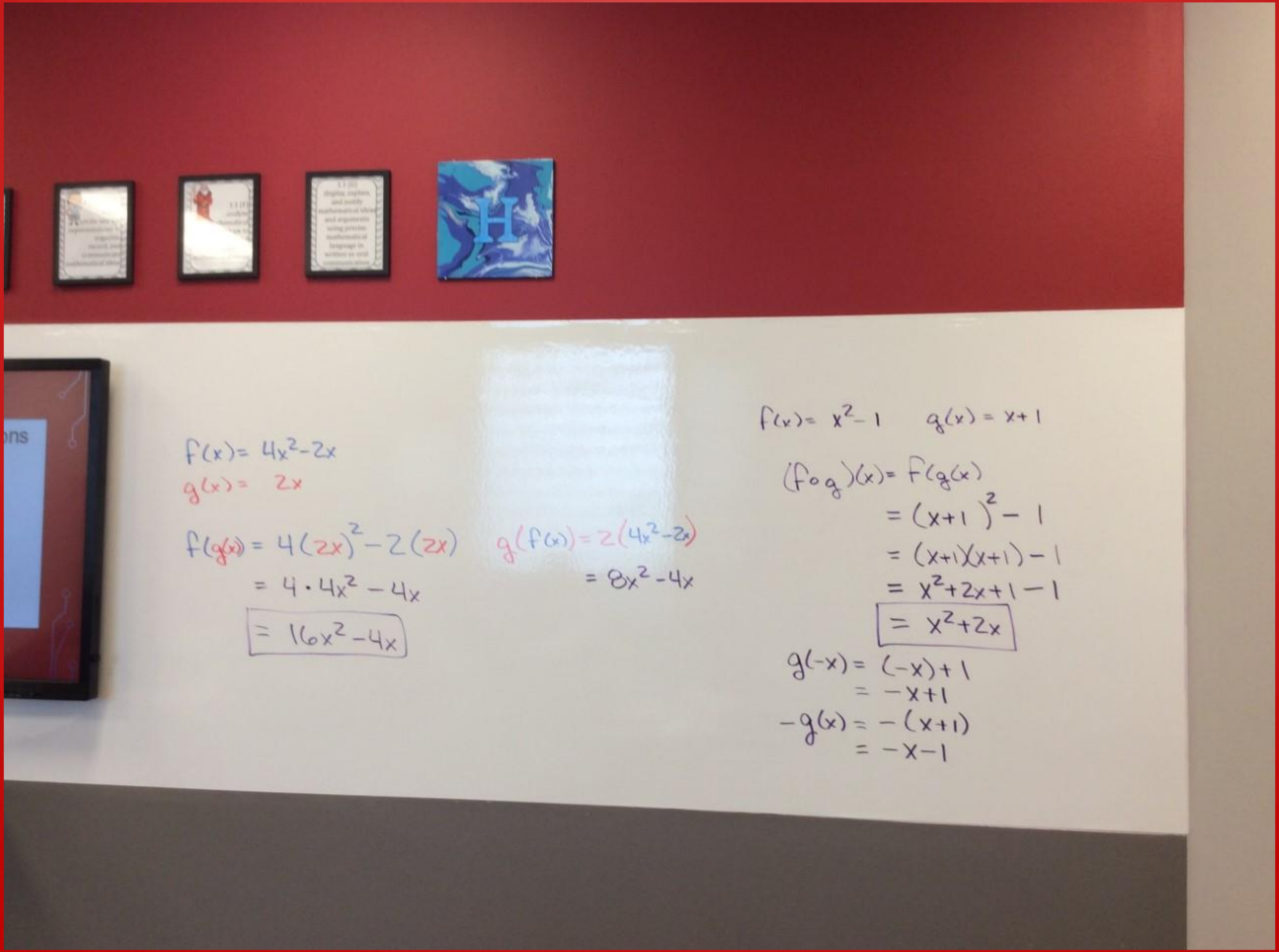
Product: $(fg)(x) = f(x) \cdot g(x)$

Quotient: $(f/g)(x) = \dfrac{f(x)}{g(x)}, g(x) \neq 0$

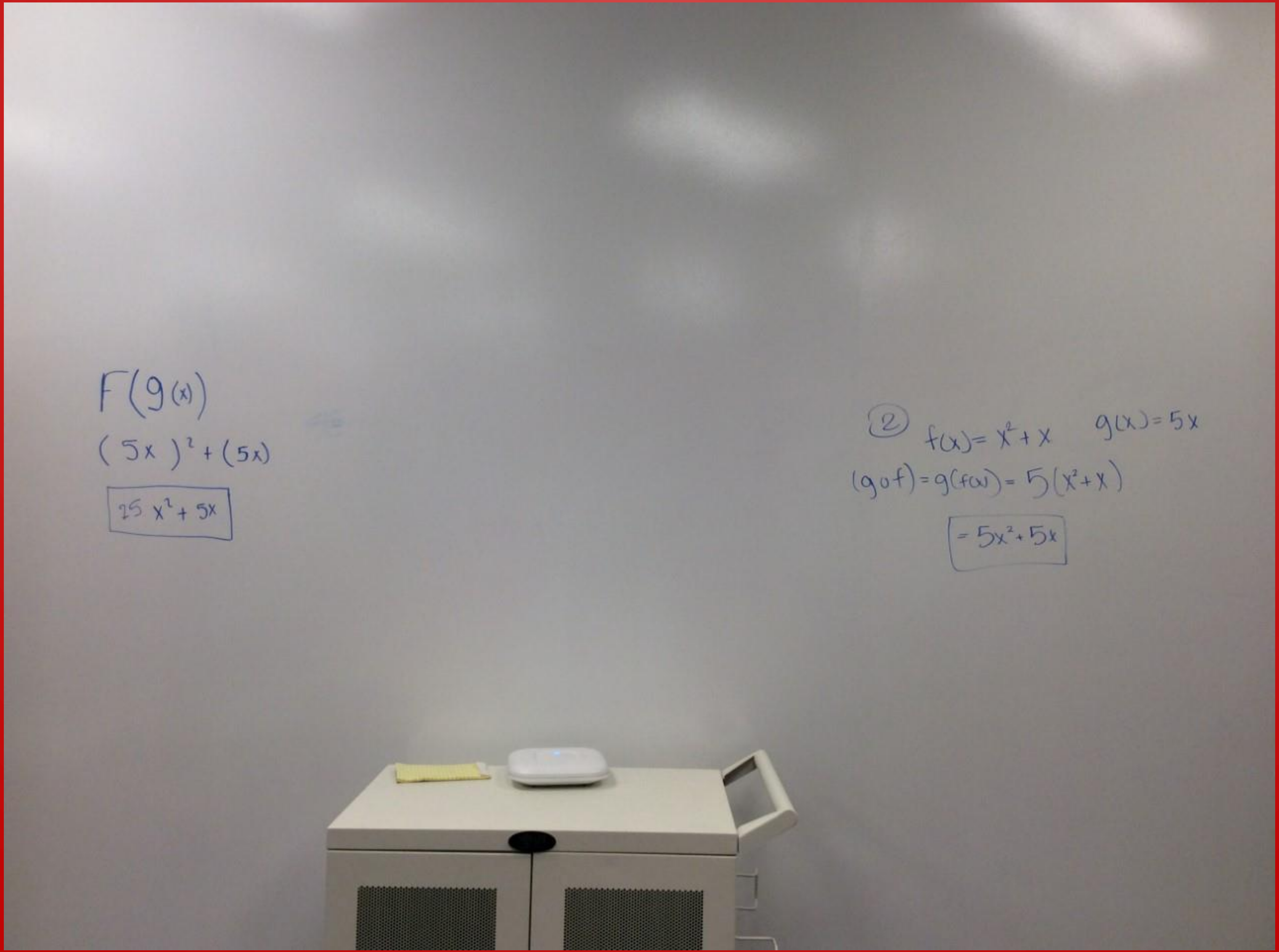
Composite: $(f \circ g)(x) = f(g(x))$



$f(x) = \frac{1}{x}$
$g(x) = x + 1$
A ✓
B ✓
C
D ✓
$f(g(x)) = \boxed{\frac{1}{(x+1)}}$
$g(f(x)) = \left(\frac{1}{x}\right) + 1$
$\boxed{= \frac{1}{x} + 1}$



$f(x) = 4x^2 - 2x$
$g(x) = 2x$
$f(g(x)) = 4(2x)^2 - 2(2x)$
$= 4 \cdot 4x^2 - 4x$
$\boxed{= 16x^2 - 4x}$
$g(f(x)) = 2(4x^2 - 2x)$
$= 8x^2 - 4x$
$f(x) = x^2 - 1 \quad g(x) = x + 1$
$(f \circ g)(x) = f(g(x))$
$= (x+1)^2 - 1$
$= (x+1)(x+1) - 1$
$= x^2 + 2x + 1 - 1$
$\boxed{= x^2 + 2x}$
$g(-x) = (-x) + 1$
$= -x + 1$
$-g(x) = -(x+1)$
$= -x - 1$

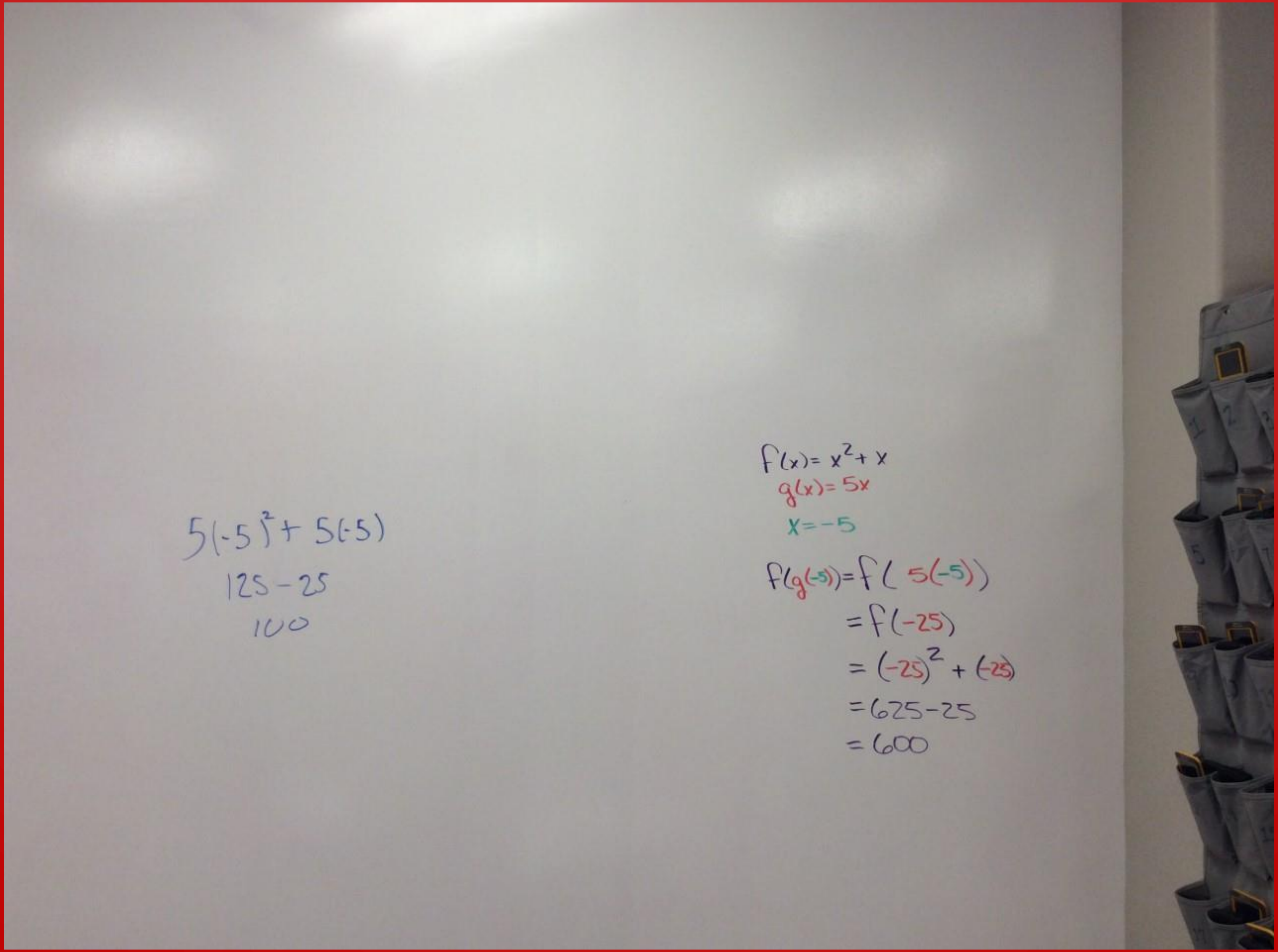

F(g(x))
(5x)² + (5x)
25x² + 5x
② f(x) = x² + x   g(x) = 5x
(g∘f) = g(f(x)) = 5(x² + x)
= 5x² + 5x

6) $(f+g)(2) = f(2)+g(2)$

$2^2+2+5(2)$

$4+2+10$

16


$5(-5)^2 + 5(-5)$
$125 - 25$
100
$f(x) = x^2 + x$
$g(x) = 5x$
$x = -5$
$f(g(-5)) = f(5(-5))$
$= f(-25)$
$= (-25)^2 + (-25)$
$= 625 - 25$
$= 600$