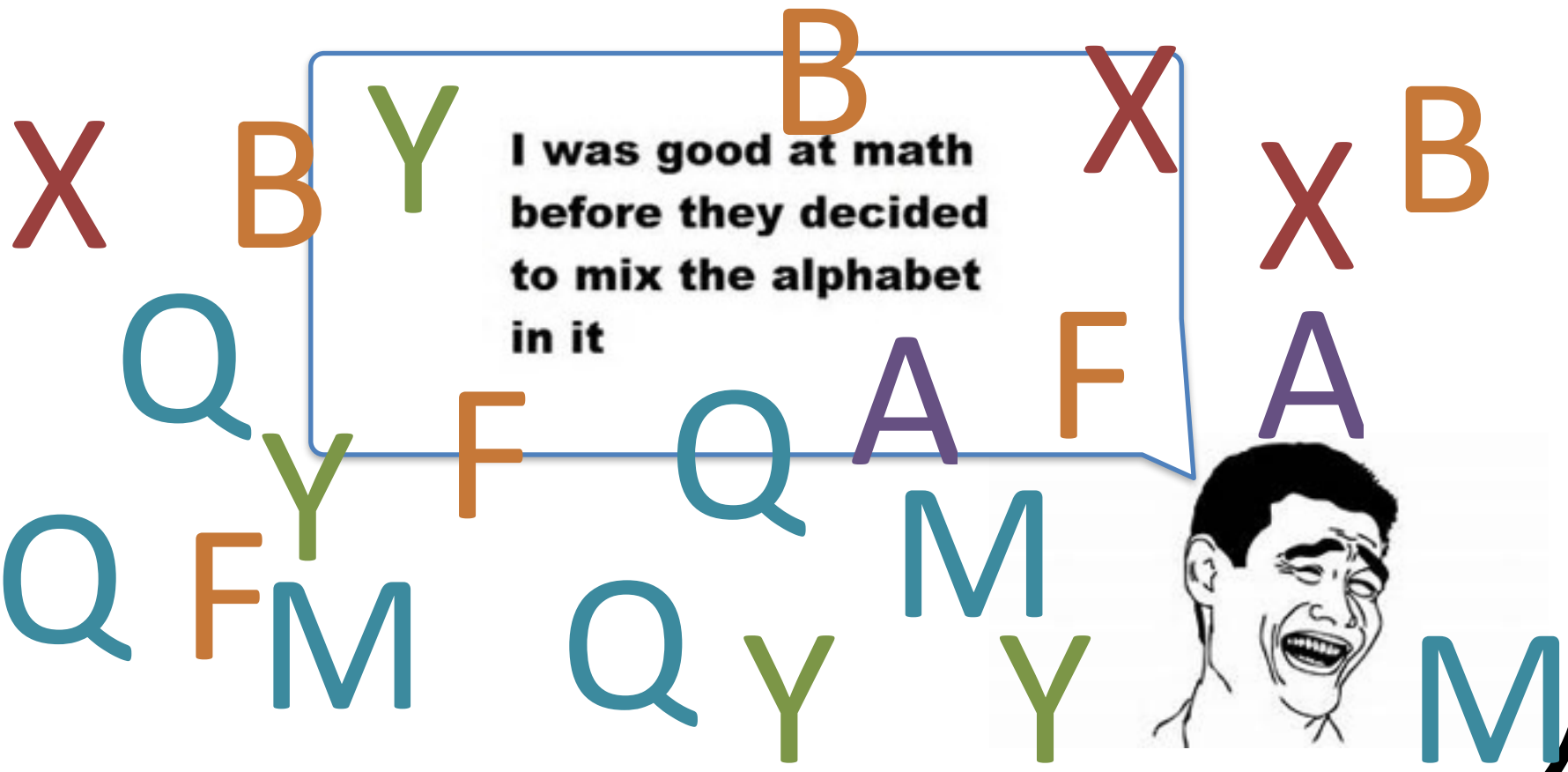
Lesson 2.3.2 – Adding, Subtracting, Multiplying and Dividing Functions



By the end of this lesson, I will be able to answer the following questions…

1. How do I add, subtract, multiply and divide functions?

2. How do I read function notation?

3. Why do fractions containing polynomials sometimes have "BAD" values.

4. How are the "BAD" reflected in the domain?

Vocabulary

1. $(f+g)(x)=f(x)+g(x)$

2. $(f-g)(x)=f(x)-g(x)$

3. $(f\cdot g)(x)=f(x)\cdot g(x)$

4. $\left(\frac{f}{g}\right)(x)=\frac{f(x)}{g(x)}$

5. **Undefined Values** – a value that is not in the domain of the function

Prerequisite Skills with Practice

$$\frac{0}{\text{Anything except } 0} =$$ ALWAYS ZERO

$$\frac{\text{Anything}}{0} =$$ ALWAYS UNDEFINED

Example One

Performing function operations from function notation

Let $f(x) = x^2 - 3x + 4$

and $f(x) = x^2 + 6x - 3$

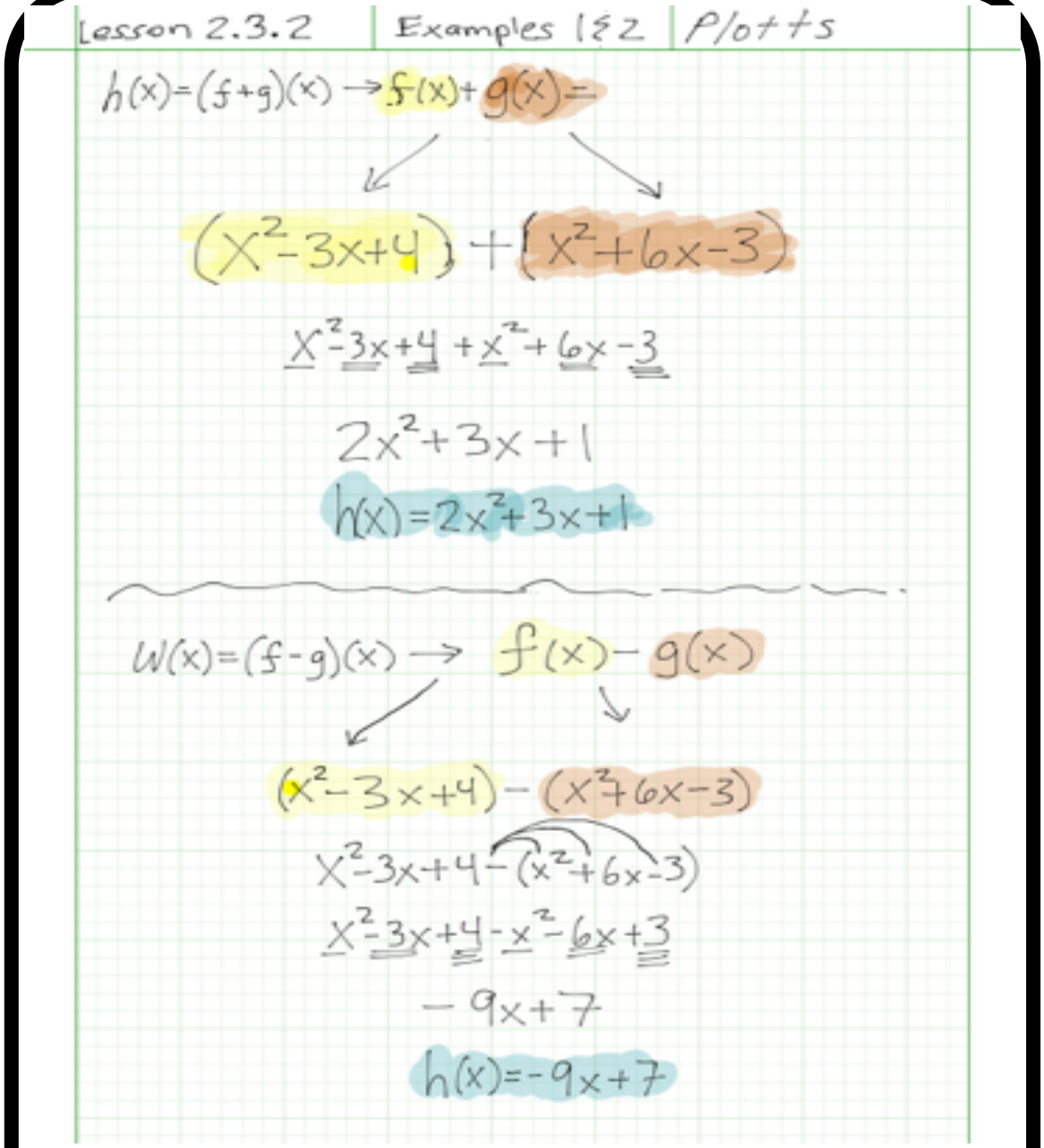
Build a new function, $h(x)$ for which $h(x) = (f + g)(x)$

Example Two

Performing function operations from function notation

Keeping the same f(x) and g(x) above, build a new function w(x) for which

$$w(x) = (f - g)(x)$$



Example Three

Performing function operations from function notation

Let $f(x) = 3x + 4$

and $g(x) = 5x - 2$

Build a new function, $h(x)$,

For which $h(x) = (f \cdot g)(x)$

Example Four

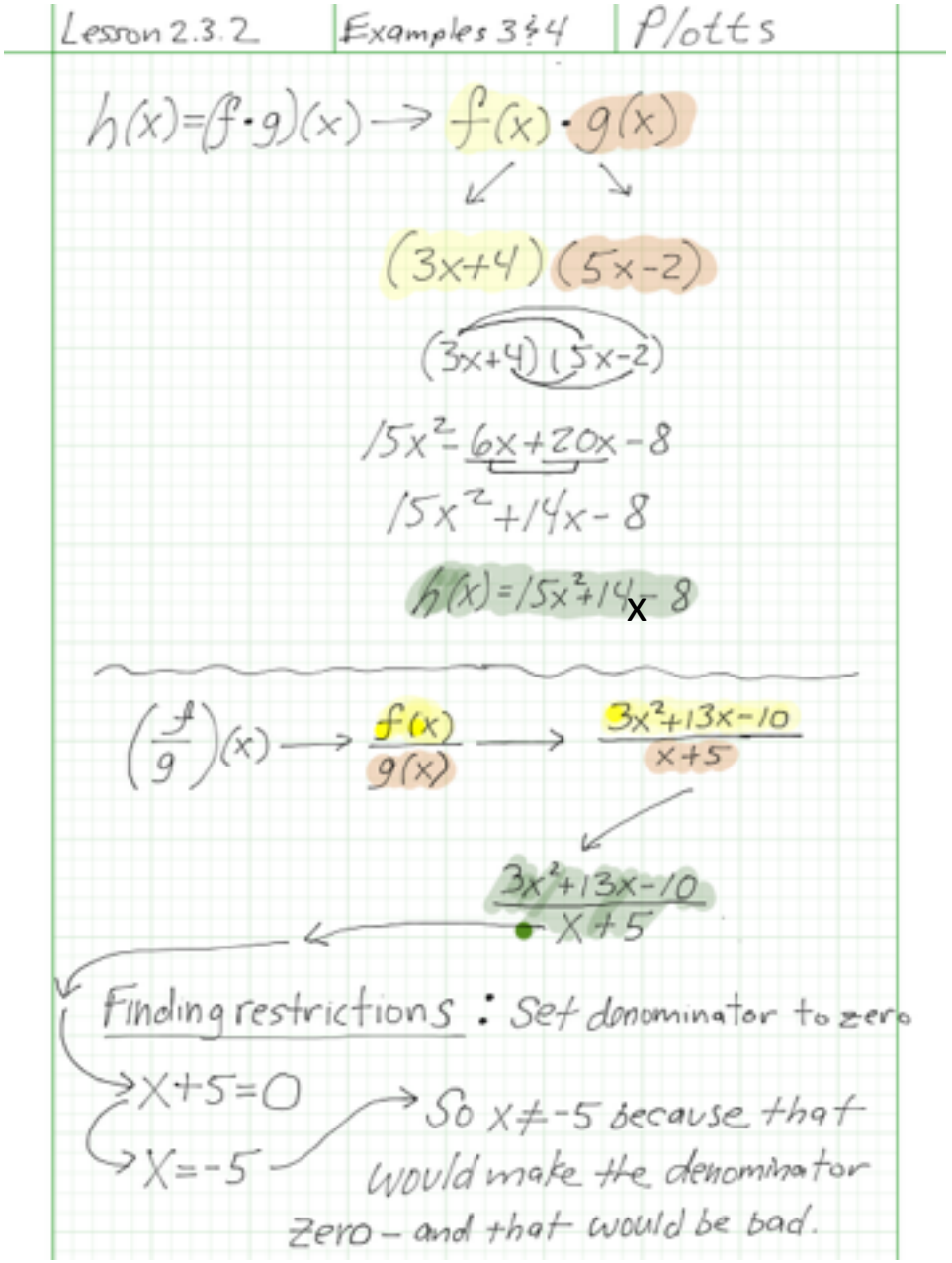
Performing function operations from function notation and finding restrictions

For $f(x) = 3x^2 + 13x - 10$

and $g(x) = x + 5$,

find $\left(\frac{f}{g}\right)(x)$

What are the restrictions for $\left(\frac{f}{g}\right)(x)$



THE END

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