

## Test 2 Critique

1. We never solve functions.
2. Functions do not have solutions.
3. Circling or boxing are not mathematical operations nor are they part of any proper English prose. Therefore they should not appear in your mathematical writings.
4. Equations are never equal.
5. Avoid mixed numbers.
6. The letters n and N are different.
7. How does  $\frac{1}{8}-1+4$  become  $\frac{1}{8}-3$  ?
8. A rule must be a rule. It must contain a verb. A rule tells you how to do something.
9. The zeros of a linear function are domain elements and therefore are real numbers not a set.
10. Find the rule for the linear function for which  $f(0) = \sqrt{3}$  and  $f(\sqrt{2}) = \frac{3}{5}$ .
11. In Problem 30, the zeros of the function are the numbers -3 and 5, not the point (-3, 5).
12. In Problem 29 Part b:  $f \circ g(x) = 2x^2 - 4x - 35$  but  $f \circ g$  is not equal to  $2x^2 - 4x - 35$
13. Note the two errors in the following work. Two wrongs do not make a right.

$$-5x - 6 \geq 0$$

$$\frac{-5x}{-5} \geq \frac{6}{-5} \quad \text{This is in error because when both sides of an inequality are multiplied by a negative number, the inequality must be reversed.}$$

$$x \leq -\frac{6}{4} \quad \text{Error because there is no basis for reversing the inequality symbol}$$

14. I find it difficult to believe that you cannot divide both sides of the above inequality by -5 without writing -5 in the denominator, but if you must, then write the following correct set of steps.

$$-5x - 6 \geq 0$$

$$-5x \geq 6$$

$$\frac{-5x}{-5} \leq \frac{6}{-5}$$

$$x \leq -\frac{6}{5}$$

15. In Problem 31, if you do calculations that lead to  $-\frac{6}{5} \leq x$  and then conclude that the domain is  $\left(-\infty, -\frac{6}{5}\right]$  you have made an error.

16.  $\frac{1^3}{2} = \frac{1 \cdot 1 \cdot 1}{2}$        $\left(\frac{1}{2}\right)^3 = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1 \cdot 1 \cdot 1}{2 \cdot 2 \cdot 2} = \frac{1}{8}$

17. When you write

$$\begin{aligned} fg(x) &= (f(x))(g(x)) = (2x-5)(x^2-2x-15) \\ &= 2x^3 - 4x^2 - 30x - 5x^2 + 10x - 75 \\ &= 2x^3 - 9x^2 - 20x + 75 \end{aligned}$$

You may stop at this point because the desired rule is clearly and correctly displayed

There is no good reason to present this work in the following manner

$$\begin{aligned} fg(x) &= (f(x))(g(x)) = (2x-5)(x^2-2x-15) \\ (f(x))(g(x)) &= 2x^3 - 4x^2 - 30x - 5x^2 + 10x - 75 \\ (f(x))(g(x)) &= 2x^3 - 9x^2 - 20x + 75 \end{aligned}$$

Nor is it necessary to write the following.

$$\begin{aligned} fg(x) &= (f(x))(g(x)) = (2x-5)(x^2-2x-15) \\ &= 2x^3 - 4x^2 - 30x - 5x^2 + 10x - 75 \\ &= 2x^3 - 9x^2 - 20x + 75 \end{aligned}$$

The rule for fg is  $fg(x) = 2x^3 - 9x^2 - 20x + 75$

And it is incorrect to conclude that the rule for fg is

$$(f(x))(g(x)) = 2x^3 - 9x^2 - 20x + 75$$