Lesson 4 – 4

f(x) notation

Algebra 2
Ms. Brunsting

For problems 1 – 14, use the following functions:

$$f(x) = 4x - 3$$
$$g(x) = x^2 + 5x$$

Evaluate the following.

1. f(4)
2. g(-2)
3. f(3.1)
4. $g(\frac{1}{4})$
5. $\frac{f(3)}{g(3)}$
6. $\frac{g(2)}{f(0)}$
7. f(g(3))
8. g(f(-1))
9. f(z)
10. g(Δ)
11. f(banana)
12. f(x + 3)
13. f(g(x))
14. f(f(x))

15. Lacen and Josiah have decided to buy a food truck and go into the barbecued catfish business. They paid $3800 for the truck. It costs them $2.15 to prepare each catfish. They sell them for $7 each because they are so delicious.

   a. Write a function that represents their costs of doing business. Name the function C(x) for Costs. x represents each catfish they buy.
   b. Find C(500), C(1000), and C(1500).
   c. Write a function that represents their income from selling catfish. Name the function I(x) for Income. x represents each catfish they sell.
   d. Find I(500), I(1000), and I(1500).
   e. Plot the graphs of C(x) and I(x) on the same set of axes.
   f. Set the functions equal to each other and determine how many catfish Lacen and Josiah must sell to break even.

16. Grace and Scarlett are trying out the new rock climbing gym in New Braunfels. Grace is 8 feet above the ground and she's climbing at a rate of 3 feet per second. Scarlett is 15 feet above the ground and she's climbing at a rate of 2 feet per second.

a. Write a function for each of them. The functions should represent the height above the ground with respect to Gavine.

b. Find G(2) and G(5)

c. Find S(2) and S(5).

d. Set the functions equal to each other and solve for the Gavine that Grace and Scarlett are at the same height.

e. Plot the graphs of G(x) and S(x) on the same axes.

17. Gavin is looking for a laser tag place for his church youth group to have a lock-in. Extreme Lazer charges $35 plus $2.50 per student. Laser Mania charges $20 plus $4 per student.

a. Write a function E(x) that represents the cost of going to Extreme Lazer. x represents the number of students.

b. Find E(5) and E(20).

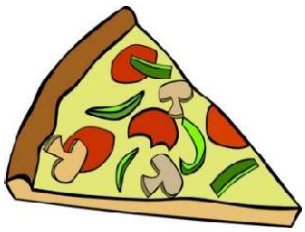
c. Write a function L(x) that represents the cost of going to Laser Mania. x represents the number of students.

d. Find L(5) and L(20).

e. If 15 students are going to the lock-in, which place should Gavin choose? How much will it cost for 15 students to go?

18. Everyone else in class got hungry and decided to order pizza. Pizza Express charges $9.50 per pizza plus $10 for the delivery. Domino's charges $11.50 per pizza and has free delivery.

a. Write the function E(x) that represents the cost of ordering pizza from Pizza Express. x represents the number of pizzas ordered.



b. Write the function D(x) that represents the cost of ordering from Dominos.

c. If we order 8 pizzas, which place would be cheaper?

d. Calculate the break-even point (where both restaurants charge the same).