

Be sure to explain how you obtain your answers!!

1. You are selling ice cream cones from a cart. You sell the cones for \$0.75 each. The cones cost you \$0.27 each and you also need to rent the cart, which costs you \$50.
 - (a) Write a formula for your profit (revenue from sales minus all costs) from selling ice cream cones. Be sure to identify all your variables.
 - (b) Explain why profit is a linear function of the number of cones sold.
 - (c) Make a graph of your profit. Be sure to include sales up to 300 cones.
 - (d) What is the slope of the profit function? Explain what it means in terms of selling cones.
 - (e) What is the vertical intercept? Explain what it means in terms of selling cones.
 - (f) What is the horizontal intercept? Explain what it means in terms of selling cones.

2.

Table A

t	0	2	4	6
$f(t)$	6.7	7.77	9.01	10.45

- (a) Is this data linear? Explain why it is or isn't.
- (b) If it is linear, give a formula for f
- (c) Is this data exponential? Explain why it is or isn't.
- (d) If it is exponential, give a formula for f .

Table B

t	0	2	4	6
$g(t)$	5.8	7.53	9.26	10.99

- (a) Is this data linear? Explain why it is or isn't.
- (b) If it is linear, give a formula for g
- (c) Is this data exponential? Explain why it is or isn't.
- (d) If it is exponential, give a formula for g .

3. A water tank has been sanitized by pouring in chlorine bleach. Bleach is toxic at the level needed to sanitize, so you need to flush out the tank using clean water. The result is that after each hour of flushing, there is a 19% reduction in the bleach concentration. Assume that when you began flushing, the bleach concentration is 150 mg/gal.
- (a) Explain why the bleach concentration is an exponential function.
 - (b) Explain why the hourly decay rate is 0.81.
 - (c) Give a formula for the concentration as a function of time.
 - (d) What is the percentage reduction in bleach concentration per day?
 - (e) You can safely use the water tank for drinking purposes when the bleach concentration is below 0.7 mg/gal. How long should you flush the tank?

4. Do problem number 8 on p. 194