

Linear Review for Quiz

AFM Unit 3 Notes

Name Key

I. Which of the following tables could represent a linear function? Explain.

1.

t	1	2	3	4	5
g(t)	5	4	5	4	5

No, not constant slope

2.

x	0	5	10	15
f(x)	10	20	30	40

yes, slope = 2

$10/5 = 2$ $10/5 = 2$

II. Identify the vertical intercept and the slope. Explain their meanings in practical terms.

3. A phone company charges according to the formula: $C(n) = 0.05n + 29.99$, where n is the number of minutes, and $C(n)$ is the monthly phone charge, in dollars.

Slope: The monthly phone charge increases by \$0.05 per minute used.

y-int: The monthly phone charge is \$29.99 if use 0 minutes.

4. The population of a town can be represented by the formula $P(t) = 54.25 - \frac{2}{7}t$, where $P(t)$ represents the population, in thousands, and t represents the time, in years, since 1970.

slope: The population in town is decreasing by 285 thousand people per year after 1970.

y-int: In 1970, the population in town is 54.25 thousand people

5. The profit of selling n items is given by the formula, $P(n) = 0.98n - 3000$. How many items must the company sell to break even? What does this value represent?

$0 = .98n - 3000$

$n = 3061.22$ items
(3062) items

This is the x-intercept.

6. Tuition cost T (in dollars) for part-time students at Stonewall College is given by $T = 300 + 200C$, where C represents the number of credits taken.

a) Find the tuition cost for 8 credits.

$T = 300 + 200(8) \rightarrow \1900

b) How many credits were taken if the tuition was \$1700?

$1700 = 300 + 200C$

$C = 7$ credits

c) What does the 300 represent in the formula for T ?

d) What does the 200 represent in the formula for T ?

c) The tuition for 0 credits taken is \$300. (y-intercept)

d) slope: The tuition cost increases by \$200 for every credit taken.

7. In a college meal plan, 30 meals cost \$152.50 and 60 meals cost \$250. Assuming the relationship is linear, write a formula for the cost of a meal plan, C , in terms of the number of meals, n .

$(30, 152.50)$ $(60, 250)$ $C = 3.25n + 55$

a) Explain the slope.

b) Explain the y-intercept.

c) Find the cost for 50 meals.

d) Determine the maximum number of meals you can buy on a budget of \$300.

a) The cost of meal plan increases by \$3.25 per meal

b) The cost of meal plan is \$55 if buy 0 meals

c) \$217.50

d) 75 meals

8. Margarita is hired by an accounting firm at a salary of \$60,000 per year. Three years later her annual salary has increased to \$70,500. Assume her salary increases linearly.

$(0, 60000)$ $(3, 70500)$

a) Find a linear equation that relates her annual salary S and the number of years, t , that she has worked on the firm.

b) What do the slope and S-intercept of her salary equation represent?

c) What will her salary be after 12 years with the firm?

d) If her salary continues to grow linearly, in how many years would she have to work there to have an income of \$100,000?

a) $S = 3500t + 60000$

b) slope: Her salary increases by \$3500 every year

S-int: Starting salary was \$60,000

c) \$102000

d) $11.428 \Rightarrow 12$ yrs