Math 103 - Cumulative Review 3 - Chapter 1 and 2.1-2.3 Name_____

SHOW WORK WHENEVER APPROPRIATE. NO CREDIT GIVEN OTHERWISE. ANSWER MUST BE CIRCLED.
Due: Wednesday February 6

Evaluate the expression. Show all steps!!!

1) $\left(-\frac{2}{7}\right)^{-3}$

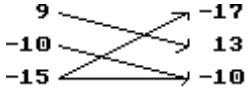
Solve.

2) If P dollars is deposited in a savings account paying r% annual interest, then the amount A in the account after x years is given by $A = P(1 + \frac{r}{100})^{x}$. Find the amount in the account afte 6 years if we deposit #560 dollars at 6% annual interest.

Simplify the expression. Use positive exponents. Assume variables represent nonnegative numbers.

3) $\frac{x^5(x^{-7})^{-7}}{(x^{-5})^{-9}}$

4) For the given relation:



a) Is this a function? YES NO EXPLAIN

b) Give the domain

c) Give the range

Complete the table using the formula.

5) Given $y = \frac{1}{3}x + 2$

a) Complete the table:

x	9	12	15	18	21
y					

b) This relation is a FUNCTION because

c) This relation is a LINEAR FUNCTION because

d) Rewrite using function notation: f(x) =

e) Complete the following table showing steps in all cases. Write answers as fractions.

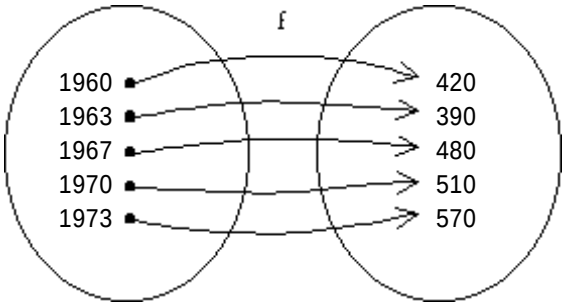
Find f(12)=	Find f(-24)	Find the value of the function when x = 3	Find f(-5)
Solve f(x) = 12	Solve f(x) = - 24	Find x when y = - 4	Find x when f(x) = -5

f) What numbers can you put in place of x and get answers for y? That is, what is the domain of this function?

Solve the problem.

6) The function f, given in the diagram below, computes the average cost of an item during year x.

a) Evaluate f(1967).



b) Explain the meaning to your answer on part (a) within the context of the problem.

c) Solve f(x) = 570

d) Explain the meaning to your answer on part (c) within the context of the problem.

Determine whether f might be a linear function.

7)

x	-2	-1	0	1
f(x)	-10	-4	2	8

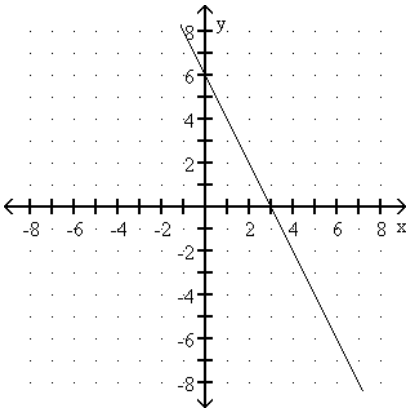
YES NO EXPLAIN

8) Make up a table listing 6 ordered pairs in such a way that you have A FUNCTION WHICH IS NOT LINEAR.

Write a linear function for each one of the following graphs.

9)

A)



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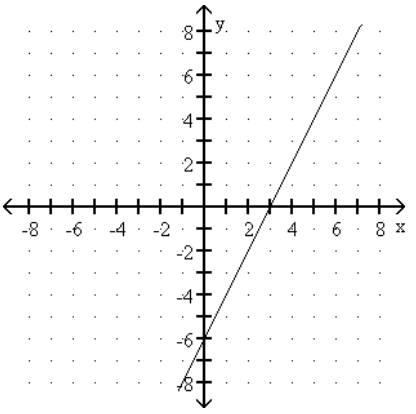

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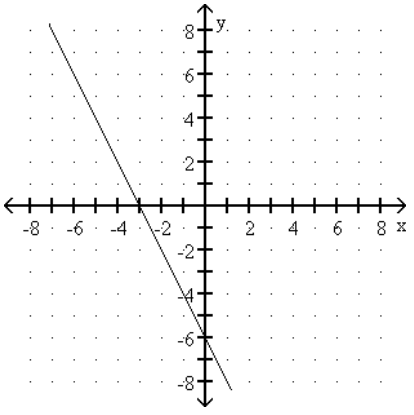

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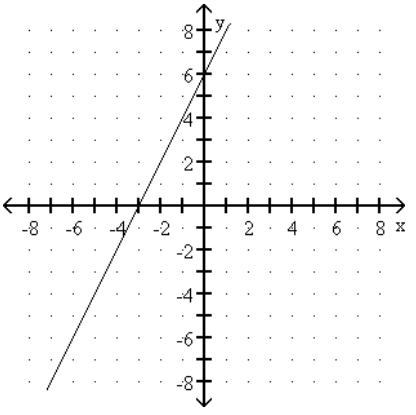


Write the slope-intercept form for a line satisfying the stated conditions.

10) The line passes through $\left(0, -\frac{11}{2}\right)$ and (1, 0).

Find the slope and y-intercept of the linear function

11) $7x - 5y = 15$

The table below represents a linear function.

12)

x	-4		0	2	4
f(x)	-12	-7	-2	3	

a) Find the missing values in the table.

b) What is the slope?

c) What is the y-intercept?

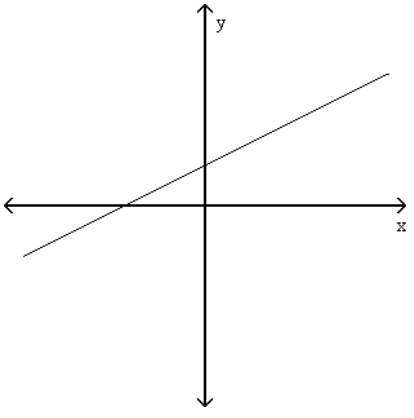
d) Write the equation of this line.

e) Complete the statement.
In this linear function, y is increasing/decreasing (circle one) at a rate of .....units per unit

Match the situation to the graph that models it best.

13) The average cost y of college tuition from 1990 to 1997

A)



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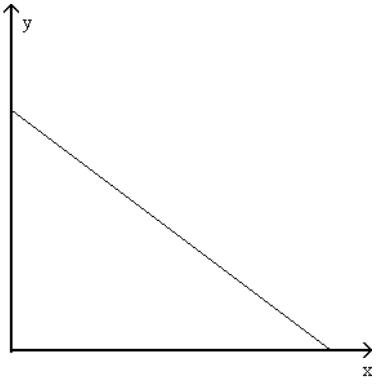

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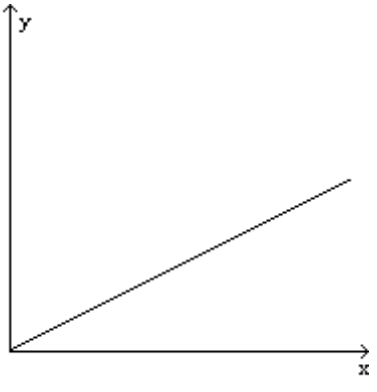

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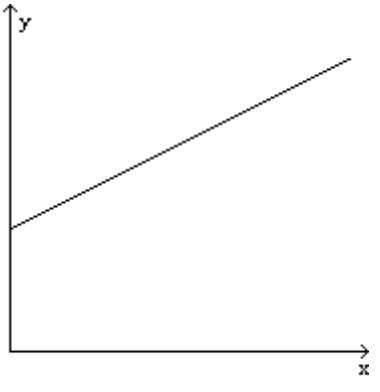
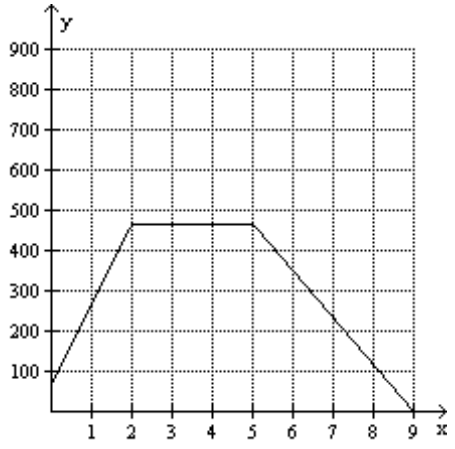


Use the line graph to solve the problem.

14) The line graph represents the gallons of water in a swimming pool after x hours. There is a pump that can either add or remove water from the pool.



a) Find the slope of the line segment from (5, 467) to (9, 0).

b) Name the time interval over which the amount of water in the pool is constant:

c) Select the correct interpretation of the slope as a rate of change from choices A - D given below.

A) $m = \frac{467}{4}$; The pump is adding water at a rate of $\frac{467}{4}$ gallons per hour.

B) $m = \frac{467}{2}$; The pump is adding water at a rate of $\frac{467}{2}$ gallons per hour.

C) $m = -\frac{467}{2}$; The pump is removing water at a rate of $\frac{467}{2}$ gallons per hour.

D) $m = -\frac{467}{4}$; The pump is removing water at a rate of $\frac{467}{4}$ gallons per hour.

Solve the problem.

15) The value, in dollars, of a copy machine is given by the function $f(x) = -350x + 5000$, where x is the number of years that have passed since the machine was purchased. Interpret the slope of the graph of f as a rate of change.

A) The copy machine increases in value by $175 each year.

B) The copy machine increases in value by $350 each year.

C) The copy machine decreases in value by $350 each year.

D) The copy machine decreases in value by $175 each year.