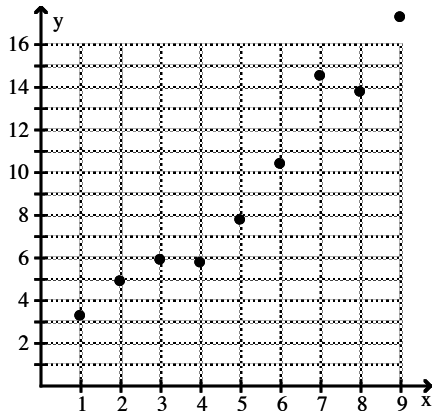
MAC 1105 Module Test 1

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

State whether the graph is or is not that of a function.

1)



A) Yes B) No

Answer: A
Objective: (1.1) Determine If Graph Represents Function (Y/N)

Determine whether or not the relationship shown in the table is a function.

2)

x	−1	1	4	7	11
y	−9	−6	9	−9	2

Does the table define y as a function of x?

A) Yes B) No

Answer: A
Objective: (1.1) Determine If Table Defines Function (Y/N)

Solve the problem.

3) This chart shows the fees for an 18-hole round of golf for each of the last 5 years at a local municipal golf course. Assume that this chart defines a function with the name of f. Find the value of x when f(x) = $23.

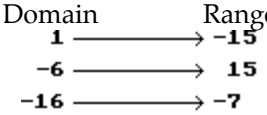
Year	Fee
1995	$22
1996	$23
1997	$26
1998	$26
1999	$30

A) 1997 B) 1998 C) 1996 D) 1999

Answer: C
Objective: (1.1) Solve Apps: Functions and Graphs

Decide whether or not the arrow diagram defines a function.

4) Domain Range



A) No B) Yes

Answer: B
Objective: (1.1) Determine If Arrow Diagram Represents Function (Y/N)

Solve the problem.

5) The function

$$E(x) = 0.0041x^3 - 0.0035x^2 + 0.169x + 1.79$$

gives the approximate total earnings of a company, in millions of dollars, where x = 0 corresponds to 1996, x = 1 corresponds to 1997, and so on. This model is valid for the years from 1996 to 2000. Determine the earnings for 1997. Round to two decimal places if necessary.

A) $2.15 million B) $1.97 million C) $1.79 million D) $1.96 million

Answer: D
Objective: (1.1) Solve Apps: Find, Interpret Function Value

Determine whether or not the relationship shown in the table is a function.

6)

January	1	2	3	4	5	6	7
Weight (lbs)	214	213	215	214	213	212	211

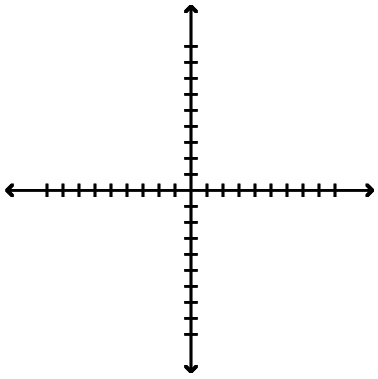
Does the table define weight as a function of the day in January?

A) Yes B) No

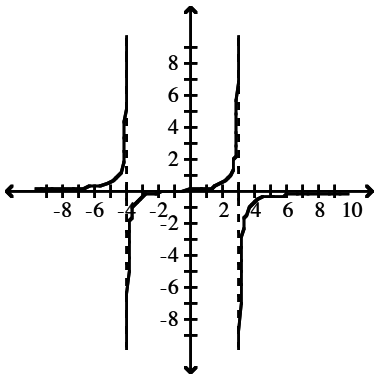
Answer: A
Objective: (1.1) Determine If Table Defines Function (Y/N)

Graph the function with a graphing utility.

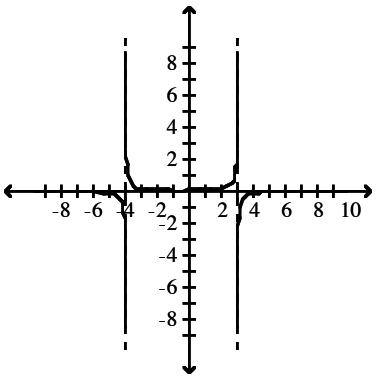
7) $y = \dfrac{x + 1}{x^2 + x - 12}$



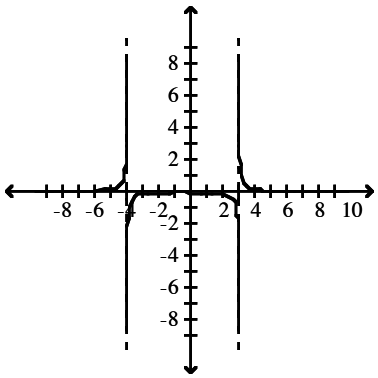
A)



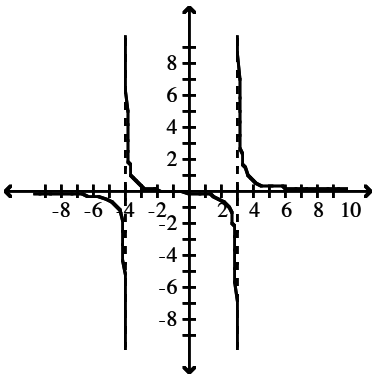
B)



C)



D)



Answer: D
Objective: (1.2) Graph Function

Solve the problem.

8) The simple interest I on an investment is equal to the principal P times the annual interest rate r times the time t the money is invested, in years. Write the equation that models the interest as a function of the number of years invested if $20,000 is invested at 6% per year.

A) I = 20,000(0.6)t
B) I = 20,000(0.06)t
C) I = 20,000(6)t
D) I = 20,000 + 0.06 + t

Answer: B
Objective: (1.2) Solve Apps: Graphs of Functions, Models

9) A small toy company that only makes action figures is owned by its stockholders. The dividend per share of stock is a function of the number of action figures it sells and is defined by

$$D(x) = \frac{\$4.41x - \$270}{3945},$$

where x is the number of action figures sold. What is the dividend for each share of stock if 1350 action figures are sold?

A) –$1.44
B) $1.58
C) $1.44
D) –$268.49

Answer: C
Objective: (1.2) Solve Apps: Find, Interpret Function Value Given Eqn

Provide an appropriate response.

10) Decide if the window [–10, 7] by [–27, 25] shows a complete graph of the function f(x) = –5x + 20.

A) No B) Yes

Answer: B

Objective: (1.2) *Know Concepts: Functions, Graphs, Models

Solve the problem.

11) The polynomial function $I(t) = -.1t^2 + 1.4t$ represents the yearly income (or loss) from a real estate investment, where t is time in years. After what year does income begin to decline?

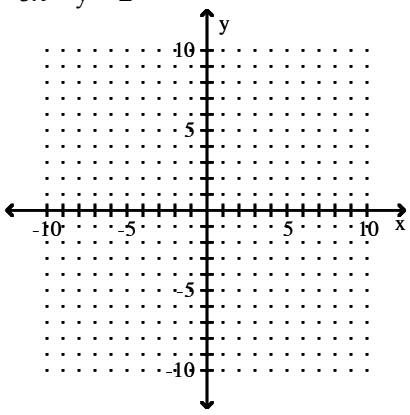
A) 6 B) 14 C) 7 D) 9.33

Answer: C

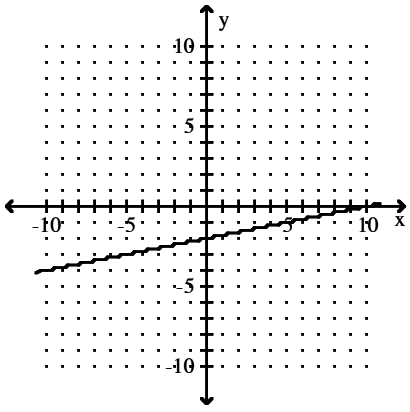
Objective: (1.2) Solve Apps: Graphs of Functions, Models

Graph the equation.

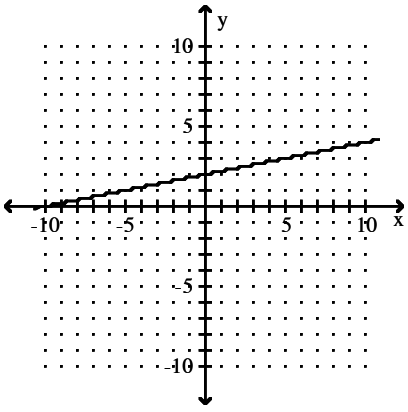
12) –5x = y – 2



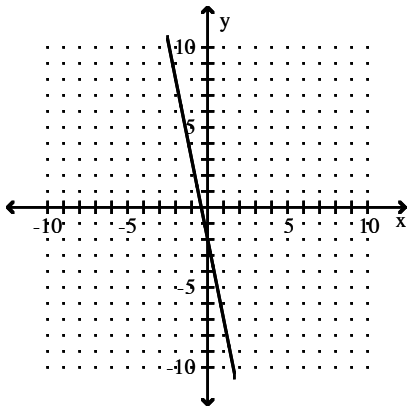
A)



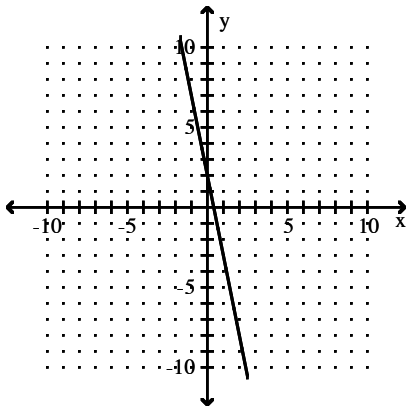
B)



C)



D)



Answer: D
Objective: (1.3) Graph Linear Function

Find the slope of the line (if it exists) and the y–intercept (if it exists).

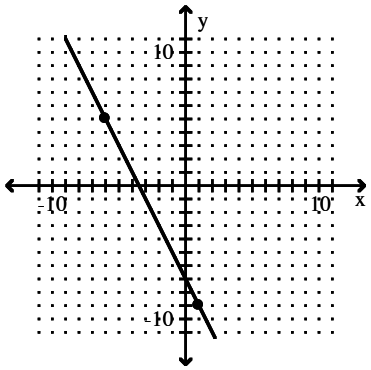
13) $y = 3 + 2x$

A) Slope –2; y–intercept (0, 3)
B) Slope 2; y–intercept (0, 3)
C) Slope –3; y–intercept (0, 2)
D) Slope 3; y–intercept (0, 2)

Answer: B
Objective: (1.3) Find Slope and y–Intercept Given Equation

Decide whether the slope is positive, negative, zero, or undefined.

14)



A) Zero
B) Undefined
C) Positive
D) Negative

Answer: D
Objective: (1.3) Determine Nature of Slope from Graph

Solve the problem.

15) The percent p of high school students who participate in sports at a public high school can be modeled by $10p - 16x = 254$, where x is the number of years after 1990. Interpret the slope as a rate of change if x is the independent variable.

A) The percent of high school students who participate in sports at this school is decreasing by 16 percent per year.

B) The percent of high school students who participate in sports at this school is increasing by 1.6 percent per year.

C) The percent of high school students who participate in sports at this school is decreasing by 1.6 percent per year.

D) The percent of high school students who participate in sports at this school is increasing by 16 percent per year.

Answer: B

Objective: (1.3) Solve Apps: Find, Interpret Slope As Rate of Change

Write the equation of the line using the information given about its graph.

16) Slope $-\frac{3}{4}$, y–intercept $\frac{35}{4}$

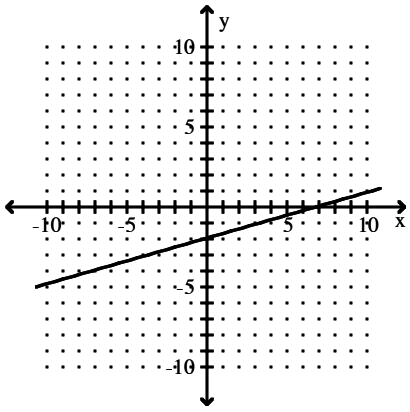
A) $y = \frac{3}{4}x - \frac{35}{4}$ B) $y = \frac{3}{4}x + \frac{35}{4}$ C) $y = -\frac{3}{4}x - \frac{35}{4}$ D) $y = -\frac{3}{4}x + \frac{35}{4}$

Answer: D

Objective: (1.4) Write Equation of Line Given Slope, y–Intercept

Write the equation of the line whose graph is shown.

17)



A) $y = 7x - 2$ B) $y = \frac{2}{7}x - 2$ C) $y = -7x - 2$ D) $y = \frac{7}{2}x + 7$

Answer: B

Objective: (1.4) Write Equation of Line from Graph

Solve the problem.

18) A gas station sells 4820 gallons of regular unleaded gasoline in a day when they charge $1.35 per gallon, whereas they sell 3890 gallons on a day that they charge $1.40 per gallon. Find a linear function that expresses gallons sold as a function of price. Use this function to predict the number of gallons sold at a price of $1.23 per gallon.

A) 7061 gallons B) 7052 gallons C) 7048.7 gallons D) 7056.1 gallons

Answer: B
Objective: (1.4) Solve Apps: Eqns of Lines, Rates of Change

19) The table below shows the weight for a calf raised by a local rancher. Use the information to determine the average rate of change in the calf's weight per day.

Calf's Weight

Day	Weight (in lbs)
1	505
5	525
15	575
25	625
40	700

A) $\frac{1}{5}$ lb per day B) 50 lbs per day C) 500 lbs per day D) 5 lbs per day

Answer: D
Objective: (1.4) Solve Apps: Eqns of Lines, Rates of Change

Write the equation of the line using the information given about its graph.

20) Slope $-\frac{4}{3}$, y–intercept (0, 7)

A) $y = \frac{4}{3}x - 7$ B) $y = \frac{4}{3}x + 7$ C) $y = -\frac{4}{3}x - 7$ D) $y = -\frac{4}{3}x + 7$

Answer: D
Objective: (1.4) Write Equation of Line Given Slope, y–Intercept