

MTH 150 Chapter 2

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1 Reflection

I found mostly sections 2.1 – 2.2 simple just because I have seen most of these problems in high school.

Especially section 2.1 the problems were basic functions and basic math. When it comes to linear equations as long as you input the correct values finding the answers came really easy.

I found section 2.3 very moderately easy, what became confusing in the specific wording of the question that sometimes confuses me but the process itself is very simple

As for section 2.4 i found it o be pretty simple since its basic plotting information that is given from the data. I have trouble still managing latex and how to input graphs but the work itself is pretty simple.

What I didn't understand was how to determine graphs with absolute values, i had to look up a couple lessons to get a refresher but after the work was still partially difficult as well as inputting graphs into latex

2 Section 2.1: Linear Functions

2.1 1,2,7,8,17,25

1. For each of the following functions, evaluate: A town's population has been growing linearly. In 2003, the population was 45,000, and the population has been growing by 1700 people each year. Write an equation, $P(t)$, for the population t years after 2003.

$$p(t) = mt + b$$

$$p(t) = 1700 + 4500$$

2 A town's population has been growing linearly. In 2005, the population was 69,000, and the population has been growing by 2500 people each year. Write an equation, $P(t)$, for the population t years after 2005.

$$p(t) = mt + b$$

$$p(t) = 2500(t) + 69000$$

7 Determine if each function is increasing or decreasing

7

$$f(x) = 4x + 3$$

$$y = mx + b$$

4x is positive showing us slope will be increasing

8

$$g(x) = 5x + 6$$

Slope has an integer is greater than zero so its increasing

17 Find the slope of the line that passes through the two given points $(2,4)$ $(4,10)$

$$m = \frac{\text{change}(y)}{\text{Change}(x)}$$

$$\frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{10 - 4}{4 - 2} = \frac{6}{2} = \frac{3}{1}$$

$$y = 3(2) + b$$

$$y = 6 + b$$

$$-2 = b$$

$$y = 3x - 2$$

25 Sonya is walking home from a friend's house. After 2 minutes she is 1.4 miles from home. Twelve minutes after leaving, she is 0.9 miles from home. What is her rate?

$$\frac{\text{change in Distance}}{\text{Change over time}}$$

$$\frac{.9 - 1.4}{12 - 2} = \frac{-.6}{10}$$

Comments

This was pretty simple, i just had to plug in the points to solve for $mx+b$

3 Section 2.2: Graphs of Linear Functions

7,10,12,13,23,29,38,41

7 article graphicx

23 If $g(x)$ is the transformation of $f(x) = x$ after a vertical compression by $3/4$, a shift left by 2, and a shift down by 4

$$f(x) = x$$

$$g(x) = 3/4(x + 2) - 4$$

$$3x + 4y = -22$$

$$m = -\frac{3}{4}$$

$$y = (0, -2.5)$$

29 Find the horizontal and vertical intercepts of each equation

$$(0, 2) \text{vertical}$$

$$(2, 0) \text{horizontal}$$

38 Given below are descriptions of two lines. Find the slopes of **Line 1** and **Line 2**. Is each pair of lines parallel, perpendicular or neither? *Line 1: Passes through (1,7) and (5,5)* *Line 2: Passes through (1, 3) and (1,1)*

$$y = mx + b = -\frac{2}{4}x + 7$$

$$(1, 7)(5, 5)m = -\frac{2}{4}$$

$$(-1, 3)(1, 1)$$

$$\frac{1 - 3}{1 - 1} = \frac{-2}{2}$$

NEITHER

41 Write an equation for a line parallel to $f(x) = 5x + 3$ and passing through the point $(2, -12)$

$$-5x - 3 = y = -5x + b$$

$$-12 = (-5)(2) + b$$

$$-12 = -10 + b$$

$$b = -2$$

$$y = -5x - 2$$

This was simple, had to look up some lessons to get a refresher on the exercises to figure out differences between parallel and perpendicular lines

4 Section 2.3: Rates of Change Behavior and of Graphs

1,2,13,14

1 In 2004, a school population was 1001. By 2008 the population had grown to 1697. Assume the population is changing linearly. a. How much did the population grow between the year 2004 and 2008? b. How long did it take the population to grow from 1001 students to 1697 students? c. What is the average population growth per year? d. What was the population in the year 2000? e. Find an equation for the population, P , of the school t years after 2000. f. Using your equation, predict the population of the school in 2011.

A

$$p(t) = m(t) + b$$

$$1697 - 1001 = 696$$

$$696 \text{people}$$

B

$$2004 - 2008 = 4 \text{years}$$

C

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{1697 - 1000}{4 - 0}$$

$$\frac{696}{4} = 174$$

D

$$p = 174(t) = 1001$$

$$p = 174(-4) + 1001$$

$$p = -696 + 1001$$

$$p = 305$$

E

$$p = 174(t) + 305$$

F

$$p = 174(8) + 305$$

2 In 2003, a town's population was 1431. By 2007 the population had grown to 2134. Assume the population is changing linearly.
a. How much did the population grow between the year 2003 and 2007? b. How long did it take the population to grow from 1431 people to 2134? c. What is the average population growth per year? d. What was the population in the year 2000? e. Find an equation for the population, P , of the town t years after 2000. f. Using your equation, predict the population of the town in 2014.

A

$$2134 - 1431 = 703$$

703people

B

$$2007 - 2003 = 4years$$

C

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{2134 - 1431}{4 - 0}$$

$$\frac{703}{4} = 175.75$$

D

$$p = 175.75(-3) + 1431$$

$$p = -527.25 + 1431 = 903.75$$

903.75peoplein2000

E

$$p = 175.75(11) + 1431$$

F

$$= 364.25 \text{ population}$$

13 Find the area of a triangle bounded by the y axis, the line $f(x) = 9 - \frac{6}{7}x$ and the line perpendicular to $f(x)$ that passes through the origin.

$$f(x) = 9 - \frac{6}{7}x$$

$$g(x) = \frac{7}{6}x = \left(9 - \frac{6}{7}\right)$$

$$A = \frac{1}{2} \cdot 9 \cdot \frac{342}{49}$$

14 Find the area of a triangle bounded by the y axis, the line $f(x) = 12 - \frac{1}{3}x$ and the line perpendicular to $f(x)$ that passes through the origin.

$$f(x) = 12 - \frac{1}{3}x$$

$$g(x) = 3x$$

$$\frac{3x}{3} = \frac{12}{-3} \cdot x$$

$$x = \frac{18}{5}$$

This was pretty simple, as long as I knew the equation $p = m(x) + t$ finding the inputs of values came easily

5 Section 2.5: Absolute Value Functions

This was fairly simple, I'm still having trouble getting used to latex and its commands, when it comes to inputting graphs i keep finding myself stuck in errors