

MTH 150 Chapter 1

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1 Reflection

At the beginning I was rather confident in my abilities with math, though as I progressed through this chapter, I could see that my skills needed more work than I originally imagined. I found that square roots and fractions often gave me more trouble than I am comfortable with. While I found the first few problems easy, after that I began having a more trouble, often having to check the answer key before I even came up with an answer. From this experience, I now understand how I really need to ask for help when I'm stuck and need to better manage my time to do this project. I procrastinated much more than I should have, which is really reflected in this document. I now understand that I need to be a lot more on top of my work from here on out, and I CANNOT procrastinate.

2 Section 1.1: Functions and Function Notation

2.1 Problem 22.

For each of the following functions, evaluate: $f(-2)$, $f(-1)$, $f(0)$, $f(1)$ and $f(2)$

22. $f(x) = 8 - 3x$

Answers:

$$f(-2) = 8 + 6 = 14$$

$$f(-1) = 8 + 3 = 11$$

$$f(0) = 8 - 0 = 8$$

$$f(1) = 8 - 3 = 5$$

$$f(2) = 8 - 6 = 2$$

Comments

This was a rather simple problem to solve, just substitute x with the numbers listed. Of course, I needed to be mindful of the change from negative numbers to positive numbers, but that wasn't an issue in this problem.

2.2 Problem 29.

For each of the following functions, evaluate: $f(-2)$, $f(-1)$, $f(0)$, $f(1)$, and $f(2)$

$$f(x) = (x - 2)(x + 3)$$

Answers:

$$f(-2) = (-2 - 2)(-2 + 3)$$

$$f(-2) = -4 * 1$$

$$f(-2) = -4$$

$$f(-1) = (-1 - 2)(-1 + 3)$$

$$f(-1) = -3 * 2$$

$$f(-1) = -6$$

$$f(0) = (0 - 2)(0 + 3)$$

$$f(0) = -2 * 3$$

$$f(0) = -6$$

$$f(1) = (1 - 2)(1 + 3)$$

$$f(1) = -1 * 4$$

$$f(1) = -4$$

$$f(2) = (2 - 2)(2 + 3)$$

$$f(2) = 0$$

Comments

Similar to the last problem, this one was simple to solve, though required a bit more work and time.

I ended up checking my answers in the answer key of the book. Which agreed with my outputs. Though I needed to redo the $f(2)$ as I messed up my math, though after one retry I fixed it.

2.3 Problem 38.

Let $g(p) = 6 - 2p$

- a. Evaluate $g(0)$
- b. Solve $g(p) = 0$

Answers:

$$g(p) = 6 - 2p$$

$$g(0) = 6 - 0$$

$$g(0) = 6$$

$$g(p) = 0$$

$$g(p) = 6 - 2p = 0$$

$$p = 3$$

Comments

This problem seemed rather simple, just input 0 or p into the problem as needed. Rather similar to the previous two problems. I feel as if I didn't have many issues with this one.

2.4 Problem 43.

Write the equation of a circle centered at $(3, -9)$ with radius 6

Answers:

$$r^2 = (x - h)^2 + (y - k)^2$$

$$6^2 = (x - 3)^2 + (y + 9)^2$$

Comments

This problem required a bit more work than the previous problems I did before this one. I had to reread up on how to do this problem a few times in order to properly understand. Though eventually I understood and realized how to put the problem together with the equation.

I ended up checking my answers using the answer key of the book. Which ended up agreeing with my work.

3 Section 1.2: Domain and Range

3.1 Problem 7.

Find the domain of each function

$$f(x) = 3\sqrt{x-2}$$

Answers:

$$x \geq 2$$

Comments

I had to look up the answer to this problem. While my original answer was somewhat close, but I was still needed to look up the answer. After looking up the answer, I felt I understood a bit better, though I still reread pieces of the chapter in order to really understand where I went wrong.

3.2 Problem 20.

Given each function, evaluate: $f(-1)$, $f(0)$, $f(2)$, $f(4)$

Answers:

$$f(x) = 4x - 9 \text{ if } x < 0, \text{ and } 4x - 18 \text{ if } x \geq 0$$

$$f(-1) = -13 \text{ if } x < 0, \text{ and } -22 \text{ if } x \geq 0$$

$$f(0) = -9 \text{ if } x < 0, \text{ and } -18 \text{ if } x \geq 0$$

$$f(2) = -1 \text{ if } x < 0, \text{ and } -10 \text{ if } x \geq 0$$

$$f(4) = 7 \text{ if } x < 0, \text{ and } -2 \text{ if } x \geq 0$$

Comments

I've always had some trouble when it came down to piece wise functions, and this problem was no different. It took me a long time to figure it out, but I think I got it.

4 Section 1.3: Rates of Change Behavior of Graphs

4.1 Problem 5.

Find the average rate of change of each function on the interval specified

Answers:

6

Comments

At first, I thought I had understood the problem completely, but I was wrong. Through completing the problem, I believe I miscalculated at one point, skewing the rest of my work. I was unable to find this mistake and only realized that I made it when I checked the answer in the book.

I ended up checking my answers using the answer key of the book. Which disagreed with my work. This prompted me to look over my work, and try to redo the problem. Though I kept making the mistake.

4.2 Problem 9.

Find the average rate of change of each function on the interval specified

Answers:

13

Comments

I ended up having to look up the answer to this problem. When trying to solve the problem, the fraction definitely caused me issues. Eventually after trying and trying, I just looked up the answer.

I ended up checking my answers using the answer key of the book. Which disagreed with my work.

4.3 Problem 11.

Find the average rate of change of each function on the interval specified. Your answers will be expressions involving a parameter (b or h).

Answers:

$$4(b + 1)$$

Comments

While I didn't get the answer immediately on my first attempt of this problem, I understood after checking the answer in the book. I had missed a step or two, when doing my math, which caused me to get an incorrect answer.

I checked my answer using the book. Which disagreed with my answer, though my answer was close. I ended up correcting myself after reading the answer, and the process of the problem, seeing where I went wrong.

5 Section 1.4: Composition of Functions

5.1 Problem 1.

Given each of the functions, calculate $f(g(0))$ and $g(f(0))$

1. $f(x) = 4x + 8$, $g(x) = 7 - x^2$

Answers:

$$4(7)+8=26$$

$$7-64=-57$$

Comments

This problem wasn't that much of an issue for me, though I made a some minor math miscalculations during the first part of the problem which caused me to redo the problem, after checking the answer.

I checked my answer in the book answer key. Which disagreed with my answer to the first part of the problem and agreed with the second part of the problem. I redid the first part of the problem after seeing this and got the correct answer the second time.

5.2 Problem 21.

For each pair of functions, find $f(g(x))$ and $g(f(x))$. Simplify your answers.

Answers:

$$\frac{x}{7}$$

$$7x - 36$$

Comments

Again fractions were my enemy here. I ended up having to look up the answers to this problem. I always find problems that include fractions to be more difficult than others. I looked up the answer in the book answer key.

5.3 Problem 23.

For each pair of functions, find $f(g(x))$ and $g(f(x))$. Simplify your answers.

Answers:

$$x + 3$$

$$\sqrt{(x^2 + 3)}$$

a **Comments**

Unfortunately the square roots in this problem ended up causing me issues. I ended up having to look up the answers to this problem. I don't know why the square roots in this problem gave me so much trouble. I looked up the answer in the book answer key.

6 Section 1.5: Transformation of Functions

7 Section 1.6: Inverse Functions