Project Part 1.1
Page 17
(x=-2)(x=-1)(x=0)(x=1)(x=2)

Problem 21: f(x) = 4 - 2x

f(-2)= 4 - 2(-2)
f(-2)= 4 + 4
Answer: f(-2) = 8
f(-1)= 4 - 2(-1)
f(-1)= 4 + 2 Answer: f(-1) = 6

f(0)= 4 - 2(0)
f(0)= 4 - 0
Answer: f(0) = 4

f(1)= 4 - 2(1)
f(1)= 4 - 2
Answer: f(1) = 2

f(2)= 4 - 2(2)
f(2)= 4 - 4
Answer: f(2) = 0

I found problem number twenty-one quite easy because all I had to do was replace x in the equation with the numbers given to get the answer.

Problem 29: f(x)= (x-2)(x+3)

f(-2)= (-2 - 2)(-2 + 3)
f(-2)= (-4)(1)
Answer: f(-2) = -4

f(-1)= (-1 - 2)(-1 + 3)
f(-1)= (-3)(2)
Answer: f(-1) = -6

f(0)= (0 - 2)(0 + 3)
f(0)= (-2)(3)
Answer: f(0) = -6

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

f(1)= (-1)(4)
Answer: f(1) = -4

f(2)= (2 - 2)(2 + 3)
f(2)= (0)(6)
Answer: f(2) = 0

I also found problem twenty-nine easy because it had the same solution as problem twenty-one by replacing x with the numbers given.

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Problem 38: g(p)= 6 - 2p

A. g(0) = 6 - 2p
-6 = -2p
-6/-2 = p
Answer: p = 3

B. g(p)= 0
g(p)= 6 - 2(3) = 0
Answer: g(p)= 6 - 6 = 0

this problem I had some difficulty with but only because I kept reading the instructions wrong. I thought I had to graph it but I asked one of my classmates and they told me I didn't need to graph it, but otherwise it was easy for me to figure it out since all you have to is find g(0) which you just replace the p in parenthesises a negative six then divide by negative two and get three equals p. Then for part B, you replace the p variable with three from part A, and you solve the equation which is g(p) = zero.

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Problem 43: write the equation for a circle centered at (3,-9), with a radius of 6

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

I did find this question quite challenging because I had to look up a video on how to do it step by step since I've never sense this type of question before.

this is the video link I watched:
https://www.youtube.com/watch?v=5MDZ3KEohgY

Section 1.2

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Problem 7:

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

$$f(x) = 3(\sqrt{2-2}) = 3\sqrt{0}$$

$$x > or = 2$$

I found this problem to be quite easy since all you have to do is pick a number between two and greater and you can find that anything less than two won't work in the equation.

Problem 19:
f(-1), f(0), f(2), f(4)

$$f(x) = \begin{cases} 7x+3 \text{ if } x < 0 \\ 7x+6 \text{ if } x > or = 0 \end{cases}$$

f(-1) = 7(-1)+3
f(-1) = -7+3
Answer: f(-1) = -4

f(0) = 7(0)+6
f(0) = 0+6
Answer: f(0) = 6

f(2) = 7(2)+6
f(2) = 14+6
Answer: f(2) = 20

f(4) = 7(4)+6
f(4) = 28+6
Answer: f(4) = 34

I found this problem to be relatively easy because they gave you numbers to replace x with and all you have to do is use the correct function from the piece wise function with each number given.

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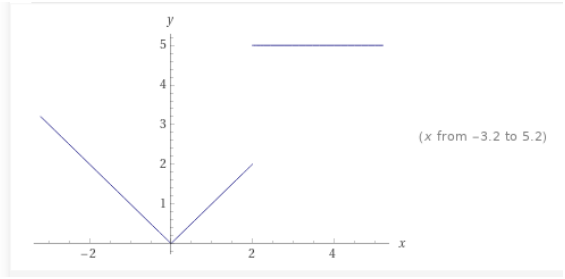
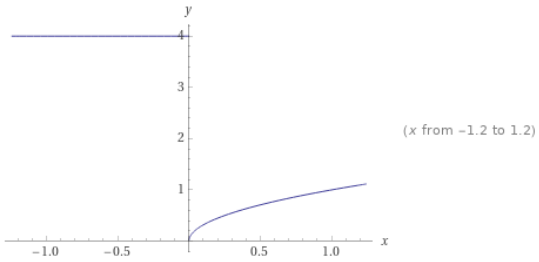
problem 31:



The only problem I had with these questions was finding out how to graph them through wolfram because I didn't know any other sites on how to do it, but besides that I found this pretty easy to graph because the the domain and range answers can only be anything on the y-axis of five if x is greater than two or anything on the graph from the x-axis of two and higher if x is equal to or less than two.

Problem 32:



I found this problem quite easy as well because for the first function the domain and range can only be found on the y-axis of four if x is less than zero and for the second function the domain and range can only be found if x is greater than or equal to zero.

Section 1.3

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$$y2 - y1/x2 - x1$$

Problem 5:

$$f(x) = x^2, [1, 5]$$

$$f(x) = (1)^2$$

$$f(x) = 1$$

$$f(x) = (5)^2$$

$$f(x) = 25$$

$$1 - 25/1 - 5 = -24/-4 = 6$$

Answer: rate of change = 6

I found this problem easy because all you have to do is replace x in the function with the given numbers then make them points on a graph, then do (y2 - y1 / x2 - x1).

Problem 6:

$$f(x) = x^3[-4, 2]$$

$$f(x) = (-4)^3$$

$$f(x) = -64 = (-4, -64)$$

$$f(x) = (2)^3$$

$$f(x) = 8 = (2, 8)$$

$$-64 - 8/4 - 2 = -72/2$$

Answer: Rate of change = -36

I found this problem also pretty easy because it's the same as problem five where you replace x in the function with the numbers given, when you get the output, you put it over the input, and subtract the first output by the second output and the first input by the second input, then simplify the solution.

Problem 11:

$$f(x) = 4x^2 - 7[1, b]$$

$$f(1) = 4(1)^2 - 7$$

$$f(1) = 4 - 7$$

$$f(1) = -3 = (1, 3)$$

$$f(b) = 4b^2 - 7$$

$$(b, 4b^2 - 7$$

$$4b^2 - 7 - (-3)/b - 1$$

$$4b^2 + 10/b - 1$$

$$4(b + 1)(b - 1)/b - 1 = 4(b + 1)$$

Answer: Rate of change = 4(b + 1)

This problem did confuse me a little only because I didn't expect there to be an equation as an answer, but after I understood what the question was asking I was able to figure out the problem.

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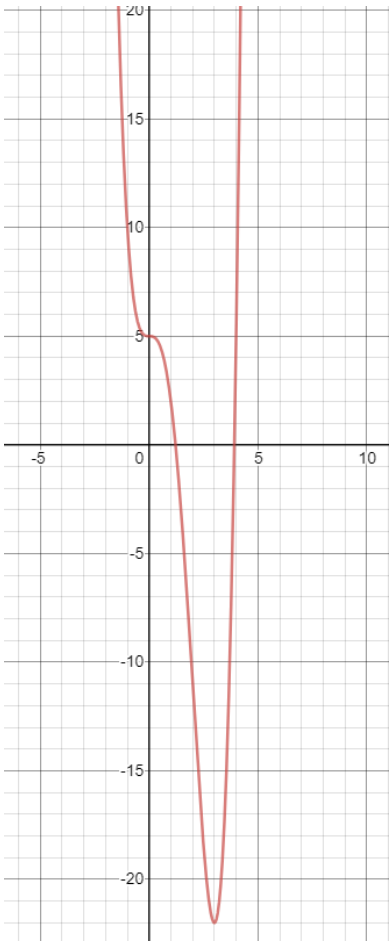
Problem 37:

$$f(x) = x^4 - 4x^3 + 5$$



the estimated local maximum is 3 and the estimated intervals are x = 0 and x = 2.
this is an increasing function

For this question I had to watch a bunch of videos on how to find the solution because I have never seen this type of question before.

Section 1.4

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f(g(0)), g(f(0))

Problem 1:

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

$$f(0) = 4(7 - 0^2) + 8$$

$$f(0) = (28 - 4(0)^2) + 8$$

$$f(0) = 28 + 8$$

Answer:

$$f(0) = 36$$

$$g(0) = 7 - (4(0) + 8)^2)$$

$$g(0) = 7 - (8)^2$$

$$g(0) = 7 - 64$$

Answer:

$$g(0) = -57$$

This question was simple for me. All you have to do is replace x in the f(x) equation with g(x) equation to solve for f(x), and then replace x in the g(x) equation with f(x) equation to solve for g(x).

Problem 23:

$$[f(x) = x^2 + 1][g(x) = \sqrt{x + 2}]$$

$$g(x) = \sqrt{(x^2 + 1) + 2}$$

Answer:

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

$$f(x) = (\sqrt{x+2}^2 + 1$$

Answer:

$$f(x) = x + 1$$

This question was also particularly easy since all you had to do was something similar for problem 1 on page 60. Begin with replacing the x in the f(x) equation with the g(x) equation and replace the x in the g(x) equation.

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Problem 27:

$$f(x) = x^4 + 6, g(x) = x - 6, h(x) = \sqrt{x}$$

$$g(x) = \sqrt{x} - 6$$

$$f(x) = (\sqrt{x} - 6)^4 + 6$$

Answer:

$$f(g(h(x))) = (\sqrt{x} - 6)^4 + 6$$

This question was easy for me too. I just replaced x in g(x) equation with the h(x) equation and with h(x) still as x in the g(x) equation and replace the x in the f(x) equation.

Section 1.5

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Problem 11:

$$f(x) = \sqrt{x}$$

shift up 1 and left 2

Answer:

$$f(x) = \sqrt{x + 2} + 1$$

This was also easy because all you had to do was add two to x and plus one for the y-intercept.

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Problem 33:

Starting with the graph of

$$f(x) = 6^x$$

write the equation of the graph that results from a. reflecting f(x) above the x-axis and the y-axis b. reflecting f(x) above the x-axis, shifting left 2 units,

and down 3 units

A.

$$f(x) = -6^{-}x$$

B.

$$f(x) = 6^{x} + 2 - 3$$

This was a bit difficult but not too bad. I did have to use the graphing site Desmos.com to figure this out because I just couldn't figure out the equation to flip it over the y- axis.

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Problem 39: For each equation below, determine if the function is Odd, Even, or Neither.

A.

$$f(x) = 3x^{4}$$

B.

$$g(x) = \sqrt{x}$$

C.

$$h(x) = 1/x + 3x$$

A. Odd
B. Neither
C. Even

This was relatively easy because if you put one as x you can can tell if the output will be even, odd, or neither if it's a decimal or no solution.

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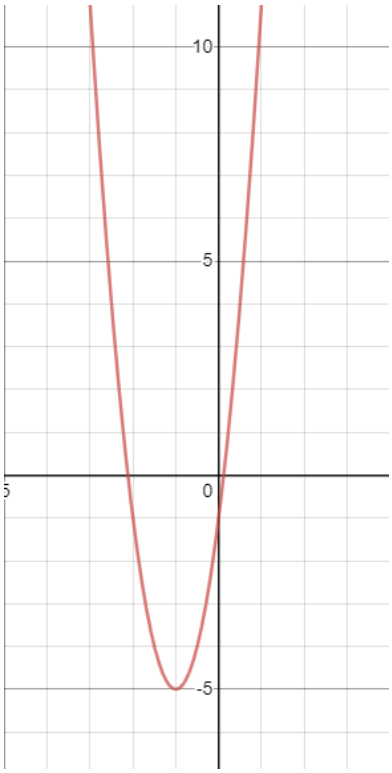
Problem 67:
Determine the interval on which the function is increasing and decreasing.

$$f(x) = 4(x+1)^{2} - 5$$

this interval is increasing

This question was quite difficult as well. I just couldn't figure out how to tell if it was increasing or noe without using Desmos.com for a graphing reference.



Section 1.6

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For each function below, find

$f^{-}1(x)$

Problem 13

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

$$x = y + 3$$

$$x - 3 = y$$

Answer:

$$f^{-}1(x) = x - 3$$

Problem 14

$$f(x) = x + 5$$

$$x = y + 5$$

Answer:

$$f^{-}1(x) = x - 5$$

Problem 15

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

$$x = 2 - y$$

$$x - 2 = -y$$

$$(x - 2)/ - 1 = y$$

$$-x + 2 = y$$

Answer:

$$f^{-}1(x) = -x + 2$$

Problem 16

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

$$x = 3 - y$$

$$(x - 3)/ - 1 = y$$

Answer:

$$f^{-}1(x) = -x + 3$$

These questions became quite simple after I watched a youtube video on how to do it since I've never seen this type of function before.
I used this video to help me with these problems:
https://www.youtube.com/watch?v=j3f88V9M0qM