**Logo

Description automatically generated San Francisco Bay University**

**MATH201 - Calculus-I**

**Homework Assignment #2**

**Due day: 6/10/2023**

**Instruction:**

1. **Push the answer sheet to Github in word file**
2. **Overdue homework submission could not be accepted.**
3. **Takes academic honesty and integrity seriously (Zero Tolerance of Cheating & Plagiarism)**
4. Plot each following group of functions in one graph respectively by **Excel**, covering the appropriate domain of *x* and *y.*

Answer:

1 a) All the other graphs are attached with this file in the excel sheet.

A picture containing line, plot, diagram, slope

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b) All the other graphs are attached with this file in the excel sheet.

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1. Given , prove that and verify it by the plot in **Excel.**

**Answer:**

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The graph is attached with this file.

1. Compare the functions and by plotting curve in **Excel** and which function grows more rapidly when *x* is large? And prove it mathematically.

Answer:

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The second function g(x) grows faster than the first function this is because even when x increases the power is always 5 but the power it self is increasing as x increases in the second function.

So, let’s take some values to prove it.

First let’s say x is 15.

f(x) = x5

f(15) = 155

= 759375

Now let’s put the same value in g(x)

g(x) = 5x

g(15) = 515

= 30517578125

Similarly, it’s going to be the same for other x values as well. Hence the second function grows more rapidly when x is large.

1. Plot the function in **Excel**. And then prove that is an odd function.

Answer:

A graph on a graph

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When we plot the graph in excel we get the above graph. When x grows the f(x) increases.

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1. For the parametrized function

Here, lets assume that b is 5 at first and then a is 4.

After plotting the graph with b = 5 and a = 4 we get the following graph.

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* 1. where a > 0. How does the graph change when b changes by showing a group of curves by **Excel**?

Answer:

When the value of b increases the graph almost remains the same.

When the value of b is 10 we get the following graph:

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When the value of b is 15 we get the following graph:

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When the value of b decreases when b = 1, we get the following graph:

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When b is a negative value, we get the following graph:

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* 1. How does it change when *a* changes in **Excel**?

Answer:

When we change the value anywhere from 1 to infinity.

When a = 1

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When a = 7

A graph with a line

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Even though we see some minor changes but overall the graph looks the same.

1. If , find expression. And that, plot and in one graph by **Excel**

Answer:

Here we have,

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1. When a camera flash goes off, the batteries immediately begin to recharge the flash’s capacitor, which stores electric charge given by

(The maximum charge capacity is and t is measured in seconds.)

* 1. Find the inverse of this function and explain its meaning.
  2. How long does it take to recharge the capacitor to 90% of capacity if a = 2 showing in the plot by **Excel**?

Answer:

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eA piece of paper with writing on it

Description automatically generated with low confidence

A picture containing line, plot, diagram, number

Description automatically generated

REFERENCES:

* <https://sccollege.edu/Departments/MATH/Documents/Math%20180/01-05-062_Inverse_Functions_and_Logarithms.pdf>