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**COMSATS University, Islamabad**

**Assignment # 1**

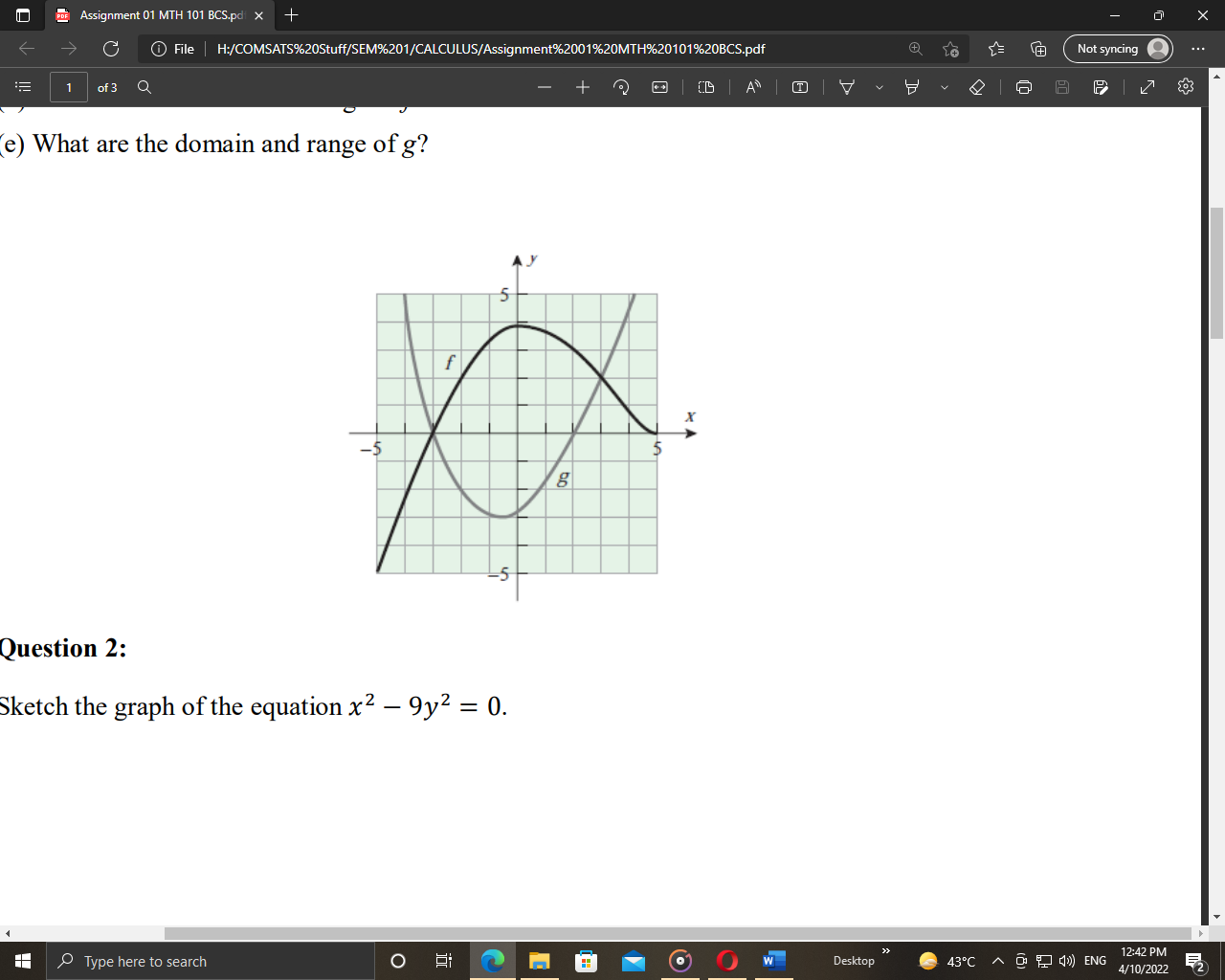
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**Course: Calculus (MTH-101)**

**Instructor: Dr. Tayyaba Ehsan**

**Date: April 9, 2022**

**Question # 1**

Use the graphs of the functions f and g in the accompanying figure to solve the following problems.

**Solution**

1. Value of f(-2) is **2**. And the value of

g(3) is **2**. This is the value of y-axis for

each given x-axis value.

1. f(x) = g(x) for these values: **{-3, 3}**.
2. f(x) < 2 for values of x **other than** the values of x in range: **[-2, 3]**.
3. Domain of **f** is **[-5, 5]** and range of **f** is **[-5, 4]**.
4. Domain of **g** is **[-4, 4]** and range of **g** is **[-3, 5]**.

**Question # 2**

Sketch the graph of the equation

**Solution**

We simplify the equation first:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| X | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Y | 1 | 0.7 | 0.3 | 0 | -0.3 | -0.7 | -1 |

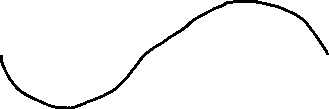
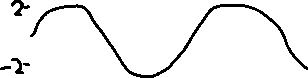
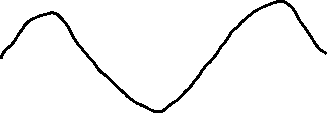
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| X | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| Y | -1 | -0.7 | -0.3 | 0 | 0.3 | 0.7 | 1 |



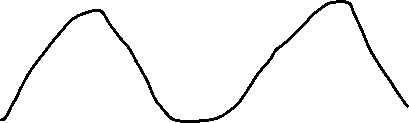
**Question # 3**

Sketch the graph of the equation by translating, reflecting, compressing, and stretching the graph of 𝑦 appropriately, and then use the graphical utility to confirm your sketch is correct.

**Solution (part i)**



1. ½



1. The functions that are **not** one-to-one are (according to the above numbering): **1, 2, 4, 5, 6, 7.**

**Solution (part ii)**

1. find x if

Since

1. find

**Question # 4**

Find the domain and range of the following.

**Solution**

and

So, domain:

And range:

Domain:

Range:

We know that

Domain:

Domain:

Range:

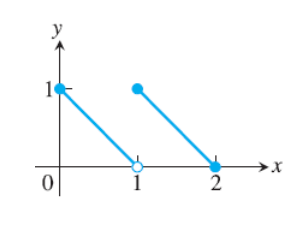
Domain:

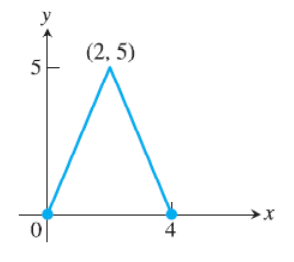
Range:

**Question # 5**

Write the piecewise formula of the following.

**Solution**





By applying formula: y = m(x – x`)