Reading Assignment # 3

Math 13 - Prof. Orellana

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READ: Sections 2.1, and 2.2 – Continue Review from math 8.

Don't forget to give page numbers in the book where you found the answer.

1. In the introduction of Section 2.1 the author explains the "essential" characteristic of a function, what is it? Give examples of functions similar to the ones given in the first paragraph of Section 2.1.

2. What are the features that every function must have? What notation do we use for functions? Draw a figure that shows the mapping nature of a function.

3. Define the range of a function and give an example of a function and its range. What is the difference between the codomain and the range?

4. Define one-to-one and onto. Use the example of a social security number to illustrate these concepts. Can you think of another similar example?

5. How does your book define a graph of a function? Where does the graph of the function $f : \mathbb{R}^2 \to \mathbb{R}$ sits in?

6. What are level curves and how do they help us sketch surfaces in 3D?

7. What is the difference between the intuitive definition of a limit and the rigorous definition of a limit? What concepts in calculus are defined using limits?

8. Properties of a new concept usually help us in doing computations. What properties of limits do you have available?

9. In Example 13, let $A = \begin{pmatrix} 1 & 2 \\ -1 & 3 \end{pmatrix}$ (note that here $n = m = 2$) and let $\mathbf{b} = (2, 1)$. Find $\lim_{\mathbf{x}\to\mathbf{b}} f(\mathbf{x})$, where f is the linear function with constant matrix A.

10. What does it mean for a function to be continuous? Give an example of a continuous function and an example of a function that is not continuous.