Math 132 Homework #3

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Problem 0.1. Chapter II section 2 exercise 3

For $f(z) = x = \Re(z)$, the quotient $(f(z) - f(z_0))/(z - z_0)$ does not converges as $z \to z_0$, because if $z = z_0 + \varepsilon$ (for very small $\varepsilon > 0$, the quotient converges to 1, but if $z = z_0 + i\varepsilon$, it converges to 0. Therefore the limit doesn't exist, so $\Re$ is not differentiable.

For $f(z) = y = \Im(z)$, the quotient $(f(z) - f(z_0))/(z - z_0)$ does not converges as $z \to z_0$, because if $z = z_0 + \varepsilon$ (for very small $\varepsilon > 0$, the quotient converges to 0, but if $z = z_0 + i\varepsilon$, it converges to 1. Therefore the limit doesn't exist, so $\Im$ is not differentiable.

This is true for any $z_0 \in \mathbb{C}$.

Problem 0.2. Chapter II section 3 exercise 2

Problem 0.3. Chapter II section 3 exercise 3

Problem 0.4. Chapter II section 5 exercise 1(a)

Problem 0.5. Chapter II section 5 exercise 1(e)

Problem 0.6. Chapter II section 5 exercise 5

Problem 0.7. Chapter II section 7 exercise 1(a)

Problem 0.8. Chapter II section 7 exercise 2

Homework Assignment 3

MATH 132 LEC 1&2

Due April 20th, Sunday 11:59 PM

Please submit your work to Gradescope!

- II.2 Exercises: #3,
- II.3 Exercises: #2, #3,
- II.5 Exercises: #1(a), #1(e), #5,
- II.7 Exercises: #1(a), #2.