1   Main Topics

1. Definition of derivative of a function?

2. Geometrical meaning of derivative: slope of a tangent line.

3. Tangent line equation.

4. Physical meaning of derivative: velocity.

5. Differentiation rules:

   - Power rule
   - Addition rule
   - Difference rule
   - Product rule
   - Quotient rule
   - Chain rule

6. Two important differentiation techniques:

   - Logarithmic differentiation
   - Implicit differentiation

7. Various derivative formulas

2   Review Exercises

Review Exercises of Chapter 2 (page 235): 1, 2, 3, 7, 9, 13, 15, 19, 23, 25, 29, 31, 33, 37, 39, 41, 43, 45, 47, 49, 53, 55, 65, 66, 71, 79, 83, 85.

3   Self-test

Please work on the following problems from Review Exercises of Chapter 2 (page 235) and then grade them yourself.

1. (2 points each) True or False problems 1, 9, 11, 12.

2. (5 points) Problem 2.

3. (5 points) Problem 3.

4. (10 points) Problem 11.

5. (5 points) Problem 15.

6. (5 points) Problem 25.

7. (5 points) Problem 29.

8. (5 points) Problem 39.

9. (5 points) Problem 41.

10. (5 points) Problem 58.

11. (10 points) Problem 65.

12. (5 points) Problem 83.

13. (10 points) Prove that $f(x) = |x|$ is continuous at 0. but not differential at 0.