Math 142 Fall 2019 - Weak 3 - Review-Midterm

2/5/2020 -

Here's what you need to know to get the perfect grade.

(1) Precalculus
   (a) Simplify the given equation.
   (b) Properties of logarithm and exponential functions.

(2) Section 3.1
   (a) How to find the limit of function algebraically?
      (i) Case 1: Function consisting of rational, root.
      (ii) Case 2: Piecewise function.
   (b) How to find the limit of function numerically using the calculator?
   (c) How to find the limit of function from the graph?
   (d) Can you figure out the points where limit does not exists from the graph of a function?
   (e) What is the definition of continuity? For given a point x where $f(x)$ is not continuous, can you figure out which conditions of the continuity fail?
   (f) Can you find an interval where the given function is continuous?

(3) Section 3.2
   (a) How to find the slope of a secant line over two points?
   (b) How to find the slope of a tangent line over two points? Can you figure out this graphically?
   (c) What is difference between "instantaneous rate of change" and "average rate of change"?
   (d) Can you interpret your calculations from the real world situation?

(4) Section 3.3
   (a) How to find the derivative using the definition of derivative?
   (b) Can you sketch $f(x)$ from $f'(x)$ or vice versa precisely?
   (c) How to find an equation of tangent line using the derivative?

(5) Section 4.1
   (a) Can you find the derivative using rules?
   (b) Can you find the derivative of the function containing exponential and logarithmic terms?
   (c) Do you know the meaning of "total cost" and "marginal cost"?
   (d) Can you approximate the revenue using the derivative?

(6) Section 4.2
   (a) Can you find the derivative of the multiplication of two functions?
   (b) Can you find the derivative of the rational function?