MAC 2311 Exam Review 2

1. Find the values of a and b that make f continuous everywhere 2.5 #46
2. Use the intermediate value theorem to show that there is a root of the given equation in the specified interval 2.5
3. Find the numbers at which f is discontinuous. At which of these numbers is f continuous from the right, from the left, or neither? 2.5 #41

1. Find the limit or show that it does not exist 2.6

 a) #16 b) #18

 c) #24 d) #21

 e) #29 f) #30

1. Find the horizontal and vertical asymptotes of the following function 2.6 #43
2. Use the given graph (in 2.4 #3) of to find a number such that

 If then,

1. If a ball is thrown into the air with a velocity of 40 ft/s, its height (in feet) after *t* seconds is given by . Find the velocity when . 2.7 #13
2. The displacement (in meters) of a particle moving in a straight line is given by

 , where *t* is measured in seconds. 2.7 #16

1. Find the average velocity over each time interval:

 i) [3, 4] ii) [3.5, 4]

 iii) [4, 5] iv) [4, 4.5]

1. Find the instantaneous velocity when
2. Find an equation of the tangent line to the graph of at if and . 2.7 #18
3. If the tangent line to at (4,3) passes through the point (0,2), find and . 2.7 #20
4. The following limit represents the derivative of some function *f* at some number *a*. State such *f* and *a*. 2.7 #34
5. Draw the graph of based off of the graph in question 2.8 #6
6. Find the derivative of the following functions using the limit definition of the derivative. State the domain of each function and each of their derivatives. 2.8
7. #27 b) #28
8. The figure (in 2.8 #43) shows the graphs of . Identify each curve.
9. Answer a-c for the following function: 2.8 #56

1. Find and
2. Where is *f* discontinuous? c) Where if *f* not differentiable?
3. Differentiate the following functions: 3.1
4. #4
5. #10
6. #22
7. #26
8. Find equations of the tangent line and normal line to the curve at the given point 3.1 #35

, (0, 2)

1. The equation of motion of a particle is , where *s* is in meters and *t* is in seconds. 3.1 #48
2. Find the velocity, acceleration, and jerk as functions of *t*.
3. Find the acceleration after 1 s.
4. Find the points on the curve where the tangent is horizontal. 3.1 #51
5. Find equations of both lines through the point (2, -3) that are tangent to the parabola

 3.1 #60

22. Differentiate: 3.2 #14

23. Differentiate: 3.2 #24

24. Find the first and second derivative of . 3.2 #28

25. Suppose that and Find . 3.2 #44

 a) b)

 c) d)

26. Differentiate the following functions: 3.3

 a) #4 b) #8

27. Evaluate the following limits: 3.3

 a) #40 b) #42

28. Find the derivative of the following functions:

 a) #12 b) #24

 c) #20 d)