

Mathematics 1110H – Calculus I: Limits, derivatives, and Integrals (Section A)
TRENT UNIVERSITY, Fall 2019

Quizzes

Quiz #1. Wednesday, 18 September. [7 minutes]

Consider the line $y = -x + 2$.

1. Find the equation of the line through $(2, 2)$ that is perpendicular to the given line. [3]
2. Sketch the graphs of both of these lines. [2]

Quiz #2. Wednesday, 25 September. [10 minutes]

Compute both of the following limits.

1. $\lim_{x \rightarrow 1} \frac{x^2 + x - 2}{x - 1}$ [2.5]
2. $\lim_{x \rightarrow 0} \frac{\sin(2x)}{x}$ [2.5]

Quiz #3. Wednesday, 2 October. [10 minutes]

Compute the derivatives of both of the following functions, simplifying where you can.

1. $f(x) = \frac{x^2 - 2}{x - 1}$ [2.5]
2. $g(x) = \sqrt{1 + \tan^2(x)}$ [2.5]

Quiz #4. Wednesday, 9 October. [10 minutes]

Compute the derivatives of both of the following functions, simplifying where you can.

1. $f(x) = \log_2(3^x)$ [2.5]
2. $g(x) = \ln(\sec(x) + \tan(x))$ [2.5]

Quiz #5. Wednesday, 16 October. [20 minutes]

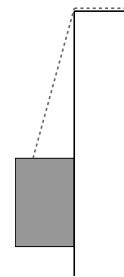
1. Find the domain and any and all intercepts, vertical and horizontal asymptotes, intervals of increase and decrease, maximum and minimum points, intervals of concavity, and inflection points of $f(x) = xe^x$, and sketch the graph of this function. [5]

Quiz #6. Wednesday, 6 November. [10 minutes]

1. A rectangle with sides parallel to the coordinate axes has one corner at the origin and the opposite corner on the line $y = -2x + 8$ in the first quadrant. Find the maximum area of such a rectangle. [5]

Quiz #7. Wednesday, 13 November. [15 minutes]

1. A rectangular block is hauled up a vertical wall by a cable attached to one end of the block so that the end of the cable is always exactly 5 cubits from the wall. The other end of the cable goes over the edge of the wall and is being hauled in at a constant rate of $\frac{12}{13}$ cubits/sec. At what rate is the block rising at the instant that there are exactly 13 cubits of cable between the edge of the wall and the block? [5]



Quiz #8. Wednesday, 20 November. [15 minutes]

Compute each of the following definite integrals.

1. $\int_1^2 \left(x^2 + \frac{1}{x^2}\right) dx$ [2.5]
2. $\int_0^{\sqrt{\pi/4}} 4x \sec^2(x^2) dx$ [2.5]