Assessment 4 - Math 141, Frank Thorne (thorne@math.sc.edu)

Wednesday, October 21, 2020

Instructions.

- Please work without books, notes, calculators, cell phones, or any assistance from others.
- Use of computers during the assessment is not allowed, except to look at the questions and ask me questions. You can ask me questions by email or by Blackboard **private** chat.
- Once you're done, please photograph your work, convert it to a single file in PDF format and rename it `141-[yourlastname]-a3.pdf` and send it by email to thorne@math.sc.edu.
- This assessment is subject to the Carolina Honor Code.
- When finished, please don't leave! We'll have a half-length lecture afterwards.

1. Use implicit differentiation to find $\frac{dy}{dx}$, given that

$$xy = \cot(xy).$$

2. Find $\frac{dy}{dt}$ if

$$y = \frac{1 + \ln t}{1 - \ln t}.$$

3. A dinghy (a small boat) is pulled toward a dock by a rope from the bow through a ring on the dock 6 ft above the bow. The rope is hauled in at the rate of 2 ft/sec.

   How fast is the boat approaching the dock when 10 ft of rope are out?

When done, write out and sign: I pledge under the Honor Code that I have neither given nor received any unauthorized aid.