

# MAT 123-FINAL EXAM-FALL 2008

NAME: \_\_\_\_\_

TA Name: \_\_\_\_\_

When do you have recitation? \_\_\_\_\_

\*Each numbered question is worth 17 points.

1. For all parts in question #1  $f(x)=\ln x$

a.) Find the slope of the secant line on  $f$  joining the points at  $x = e$  and  $x = 2e$ .

b) Express  $f'(x)$  using the difference quotient. Do not simplify.

c) The derivative of  $\ln x$  is  $\frac{1}{x}$ . ( $f'(x) = \frac{1}{x}$ ) Write the equation of the tangent line to  $f$  at  $x = 1$ .

d) Find  $f''(x)$  using the power rule of derivatives and use it to explain why  $f$  has no inflection points.