

# Quiz 3A, Math 152

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

1. Let  $f(x) = -4x + 8 \ln x$ .

(a) What is the domain of  $f$ ?

(b) Use calculus to find all local maximums or minimums.

2. Calculate  $f'(x)$  if  $f(x) = \ln [\ln(e^x)]^3$

3. The average energy consumption of a toaster oven is approximately

$$E(t) = 500e^{-0.4t} + 40 \quad (0 \leq t \leq 8)$$

kilowatt-hours per year, where  $t$  is measured in years with  $t = 0$  corresponding to 1999. For the given time interval, is average energy consumption increasing or decreasing? Use calculus to explain your answer.

4. Solve for  $x$ . Round your final answer to one decimal place (i.e. the tenths place).

$$22 - e^{0.43x} = 6$$