

Math 131, Spring 2004  
Quiz #1, Discussion Section B (Tuesday, 12:00-1:00)

Quiz problems should be solved using the methods discussed in this course. A calculator is not permitted. To receive full credit, show enough work to make it clear how you got your answer.

Name: Answer Key ID# 1/27

1. Solve the equation  $e^{e^x} = 2$  for  $x$ .

$$e^{e^x} = 2 \quad \text{iff} \quad e^x = \ln 2 \quad \text{iff} \quad x = \ln(\ln 2)$$

2. The point  $P = (1, 5)$  lies on the curve  $y = 4x^2 + 1$ . Suppose  $Q$  is the point  $(x, 4x^2 + 1)$ , also on  $y = 4x^2 + 1$ . Find the slope of the secant line  $PQ$  for  $x = \frac{1}{2}$  and  $x = \frac{3}{2}$ , and then estimate the slope of  $y$  by averaging the two slopes.

$$x = \frac{1}{2} \Rightarrow Q = \left(\frac{1}{2}, 4\left(\frac{1}{4}\right) + 1\right) = \left(\frac{1}{2}, 2\right)$$

$$\text{So } m_{\frac{1}{2}} = \frac{5-2}{1-\frac{1}{2}} = 2 \cdot 3 = 6$$

$$x = \frac{3}{2} \Rightarrow Q = \left(\frac{3}{2}, 4\left(\frac{9}{4}\right) + 1\right) = \left(\frac{3}{2}, 10\right)$$

$$\text{So } m_{\frac{3}{2}} = \frac{10-5}{\frac{3}{2}-1} = 2 \cdot 5 = 10$$

$$\text{Estimate slope at } P \text{ as } \frac{10+6}{2} = 8$$

Math 131, Spring 2004  
Quiz #1, Discussion Section A (Thursday, 11:00-12:00)

Section C

Quiz problems should be solved using the methods discussed in this course. A calculator is not permitted. To receive full credit, show enough work to make it clear how you got your answer.

Name: Answer Key ID# \_\_\_\_\_

1. Solve the equation  $\ln(\ln x) = 4$  for  $x$ .

$$\ln(\ln x) = 4$$

$$e^{\ln(\ln x)} = e^4$$

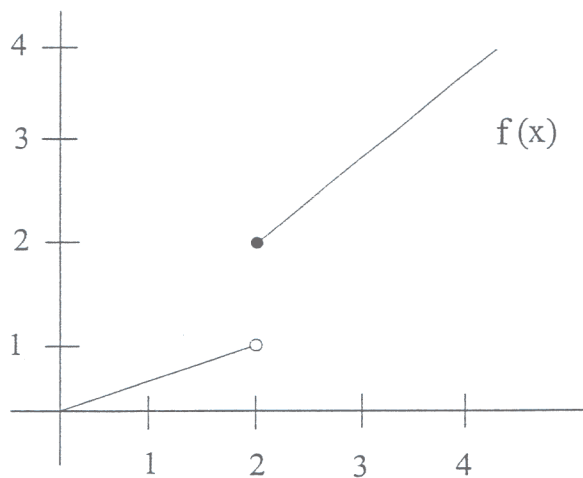
$$\ln x = e^4$$

$$e^{\ln x} = e^{e^4}$$

$$x = e^{e^4}$$

(OVER)

2. The graph of the function  $f(x)$  is given below.



Evaluate the following limits:

a)  $\lim_{x \rightarrow 2^-} f(x) = 1$

b)  $\lim_{x \rightarrow 2^+} f(x) = 2$

c)  $\lim_{x \rightarrow 2} f(x)$  (Please justify your answer.)

does not exist b/c

$$\lim_{x \rightarrow 2^+} f(x) \neq \lim_{x \rightarrow 2^-} f(x).$$