

*Ken*

Name \_\_\_\_\_ Instructor name or section # \_\_\_\_\_

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Given 42 34 35 39

QF:  $ax^2 + bx + c = 0$ , then  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Standard form for a circle:  $(x - h)^2 + (y - k)^2 = r^2$

midpoint of a line  $\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

distance formula  $d = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2}$

point-slope form:  $y = m(x - x_1) + y_1$

average rate of change:  $\frac{f(x_2) - f(x_1)}{x_2 - x_1}$

Odd:  $f(-x) = -f(x)$

periodic compounding  $A = P \left( 1 + \frac{r}{n} \right)^n$

continuous compounding  $A = Pe^{rt}$

Even:  $f(x) = f(-x)$

Properties of logs:  $\ln(a \cdot b) = \ln a + \ln b$ ,  $\ln \frac{a}{b} = \ln a - \ln b$ ,  $\ln a^p = p \ln a$

Show All Work for Full Credit!! On all graphs, tic marks are one unit.

New Stuff (Ch 3.6 to 4.5) #1 - 6.

1. (2 pts ea) Find the exact value of the logarithm without using a calculator.

- a.)  $\log_7 7 = 1$
- b.)  $\log_3 9 = 2$
- c.)  $\log_2 2 = 1$
- d.)  $\log(10^4) = 4$
- all or none*

2. (2 pts ea) Use properties of logarithms to expand (a, b, c) or condense (d, e) the logarithmic expression as much as possible. Do NOT solve for x or y.

- a.)  $\ln x^2 y = 2 \ln x + \ln y$
- b.)  $\ln \frac{e^2}{5} = 2 \ln e - \ln 5 = 2 - \ln 5$
- c.)  $\ln \sqrt{x} = \frac{1}{2} \ln x$
- d.)  $2 \log_b x + 3 \log_b y = \log_b x^2 y^3$
- e.)  $4 \ln(x+6) - 3 \ln x = \ln \frac{(x+6)^4}{x^3}$

3. (3 pts ea) Solve for x. Express the answer to 2 decimals or in terms of logarithms or exponentials.

- a.)  $10^x = 3.91$   
 $x \log 10 = \log 3.91$   
 $x = \frac{\log 3.91}{1} = .59$
- b.)  $2 + 3 \ln x = 20$   
 $3 \ln x = 18$   
 $\ln x = 6$   
 $x = e^6 = 403.43$
- OR*  
 $x \ln 10 = \ln 3.91$   
 $x = \frac{\ln 3.91}{\ln 10} = .59$