College Algebra
Chapter 4 Test

1. Graph

$f(x) = 3^{x-4}$	$f(x) = e^{x-2} + 4$

2. Use the Change of Base

Evaluate (4 decimal places if necessary): $\log_5 13$	Graph: $f(x) = \log_2(x - 5)$ (Have to show change of base setup for credit)

3. Use the definition of a log

Write in logarithmic form: $5^{x-3} = 7$	Write in exponential form: $\log_7(x - 1) = 2$

4. Use properties of logs

Write as separate logs:	Write as separate logs:
$\log \dfrac{x^3 y}{z^4 \sqrt{w}}$	$\log_9 \sqrt{\dfrac{x^2}{y^3}}$
Condense into a single log: $5\log x - 7\log y + 3\log z$	Condense into a single log: $3\log(x - 1) + 4\log x - 7\log(x + 2)$

5. Solve using equality of exponents

$4^{x-1} = 64$	$9^{4x-1} = 27^{x+3}$
$2^{x-3} = \sqrt[3]{2}$	

6. Solve a basic log equation

$\log_3(4x - 1) = 2$	$\ln(x - 8) = 3$

7. Solve a log equation by using properties of logs:

$\log_3(x) + \log_3(x - 6) = 3$	$\log(x + 2) - \log(x + 1) = 1$

8. Solve miscellaneous log problems:

Find the domain of:	Evaluate without using a calculator:
$f(x) = \log_2(7x - 1)$	$\log_3 9$
Evaluate without using a calculator: $\log_2 \sqrt{8}$	Evaluate without using a calculator: $5^{\log_5(4x-1)}$

9. Solve an exponential equation

$9^{x-1} = 5$	$4^{x+3} - 2 = 7$
$4e^{2x-1} - 3 = 5$	

10. Solve an exponential equation (compound interest problem)

Given interest is compounded continuously and principal is 3000, ending amount is 5000, rate is 2%, find time.	Given interest is compounded continuously and principal is 4000, ending amount is 4100, time is 3 years, find the rate.