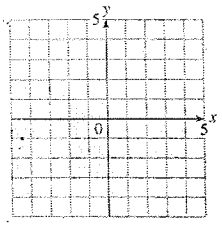
Standard 5 Review:

Name: _____

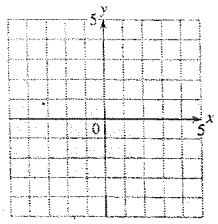
1. Sketch the graph of the following functions.

1. $f(x) = ln(x)$
2. $f(x) = ln(-x) + 1$
3. $f(x) = -ln(x - 2)$
4. $f(x) = e^x$

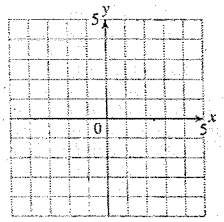
(1)



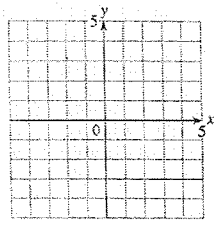
(2)



(3)



(4)



2. Evaluate the following.

a. $log_3(81)$

b. $log_2(1/8)$

3. Rewrite the following exponential equations as log equations.

a. $4^5 = 1024$

b. $e^2 = 7.39$

4. Use the change of base formula towrite the following as a quotient of Common logs and Natural logs.

a. $log_7(13)$

b. $ln(4)$

5. Use the properties of logarithms to rewrite the expressions as the sum or difference and/or the constant multiple of logs.

a. $\log\left(\frac{\sqrt{a}}{b^6}\right)$

b. $\ln\left(x^4 \bullet \sqrt[3]{y}\right)$

6. Use the properties of logarithms to rewrite the expressions as a single log.

a. $3\ln(x)+\frac{1}{2}\ln(y)$

b. $5\log(p^2)-2\log(q^3)-\frac{1}{2}\log(r)+\frac{1}{3}\log(s)$

7. Find the exact value of the following logs.

a. $log_{1.5}(2.25)$

b. $10e^{\ln(0.1)}$

c. $log_{37}(1)$

d. $3\ln\sqrt[3]{e} + 9\ln(1)$

8. Use the properties of logarithms simplify the following if $\log_x(2) = 2.1$, $\log_x(3) = 4.6$, and $\log_x(5) = 6.9$.

a. $log_x(10)$

b. $\log_x \sqrt{30}$

9. Solve for x.

a. $3e^x = 12$

b. $\log_3(x) = 2.5$

c. $\log(x-8) = 2$

d. $4^{2x+6} = 1024$

e. $4log_2(3x + 2) = 20$

f. $5^{(2x-1)} - 8 = 117$

g. $ln(3x-2)^2 + 6 = 14$

h. $log(6x) - log(x-2) = 1$

10. How long will it take an investment to double if it is compounded monthly at 8.5% ?

11. How many years would it take to produce $1,000,000 from an investment of $250,000 if the interest rate is 12%, compounded quarterly?

12. What would the interest rate need to be, to produce $100,000 from an initial investment of $20,000 compounded continuously for 15 years?

13. How much would you need to invest, if you needed $400,000 in 10 years and you were earning 7.5%, compounded yearly?

14. Scappoosium 123 (^{123}Sc) has a half-life of 2112 years.

a. Find its rate of decay (k)

If you started with 20*g* of ^{123}Sc , how much would you have after:

b. 1000 years

c. 5000 years

If I have 25*g* now, how much did I have:

d. 500 years ago

e. 1000 years ago

f. If I have a sample that weighs 50*g*, how long until it weighs 15*g*?