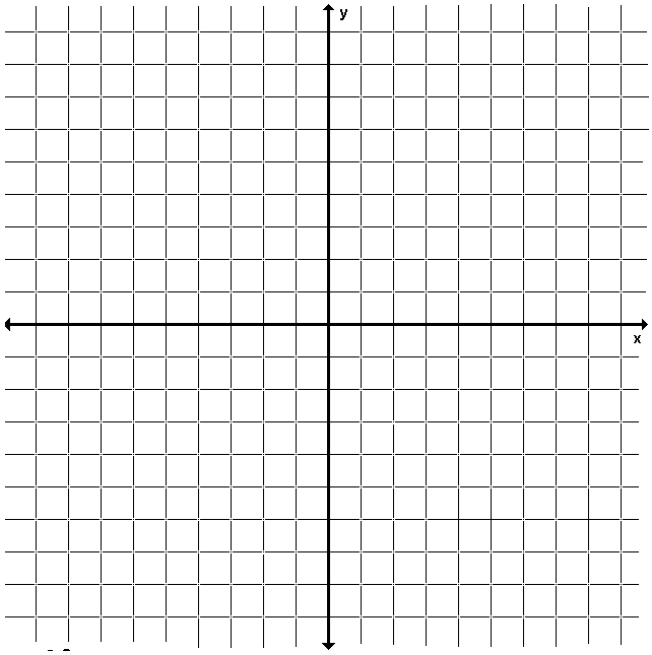
Algebra 2 Unit 4 Assessment Study Guide Name_____ Period:_____

A scientific calculator may be used on this exam. Show all work to received full credit.

1. Let $f(x) = 3\log_2(x+1) - 4$

a. Graph the parent function and then graph f(x)

b. Graph $f(x)$.



c. List the transformations of f(x)

2.Stacey invested $500 at 7% interest compounded continuously.

a. Write a model $m(t)$ that represents the money in Stacey's account in t years.

b. How much money is in Stacey's account after 2 years? Round to the nearest cent.

c. Approximately when will Stacey have $2000 in her account? Round to the nearest tenth of a year.

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3. Let $f(x)=\left(\frac{1}{2}\right)^x$

a. State the end behavior of *f(x)*.

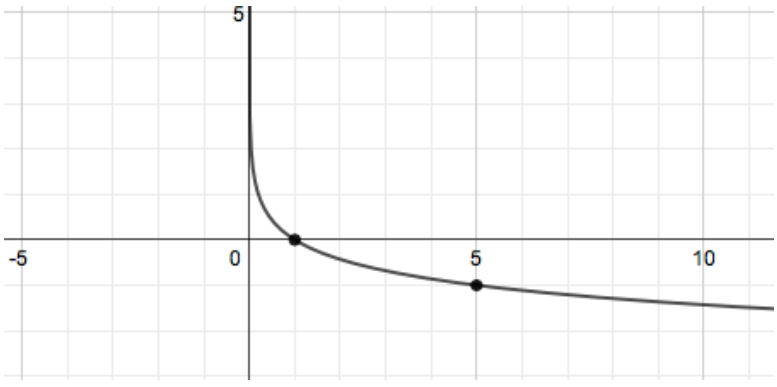
b. Domain of $f(x)$:_____ Range of $f(x)$:_____

c. Identify the asymptote(s) of $f(x)$:

d. What transformation(s) can you use to obtain the graph of $g(x)=\left(\frac{1}{2}\right)^{x-1}+3$ from the graph of $f(x)=\left(\frac{1}{2}\right)^x$?

4. Refer to the following graph to answer these questions.

What type of function is modeled by the graph below? (Pick one)



a. $y=-log5$
b. $y=log_5 x$
c. $y=log_5(-x)$
d. $y=-log_5 x$

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5.Solve for x by using the same base. (Show work for credit)

$a.\ 2^{10x} = 32$ b.$2^{4x-2} = 2^{x-1}$

6.$Solve\ for\ x$. Round to the nearest thousandth.

$a.\ e^x = 4$ b. $3^{x+2} - 4 = 9$

7. Simplify

$a.\ 4^{log_4 3+x}$ b.$log_3 3^{x+5}$

8. Express each exponential statement as a logarithmic statement.

$a)\ 4^{-3} = \frac{1}{64}$ b)$2^4 = 16$

9.Express each logarithmic statement as an exponential statement.

a) $log_4 256 = 4$ b) $log_3 \frac{1}{9} = -2$

10. Sona recently inherited $10,000. She has two savings plans to choose from.

Plan 1
1.3% interest
Compounded Monthly for 5 years

Plan 2
3.0% interest
Compounded Continuously for 5 years

a. Which plan is better? Show your work.

b. How long will it take her to save $20,000 with plan 2, round to the nearest year.

11)Solve for x. Check for extraneous solutions.

$a. log_3(x-1) = 5$ b.$log_2(2x) = 3 - log_2(x-3)$

12)Simplify
a.$log_2 21$ b. $log_3(27)$