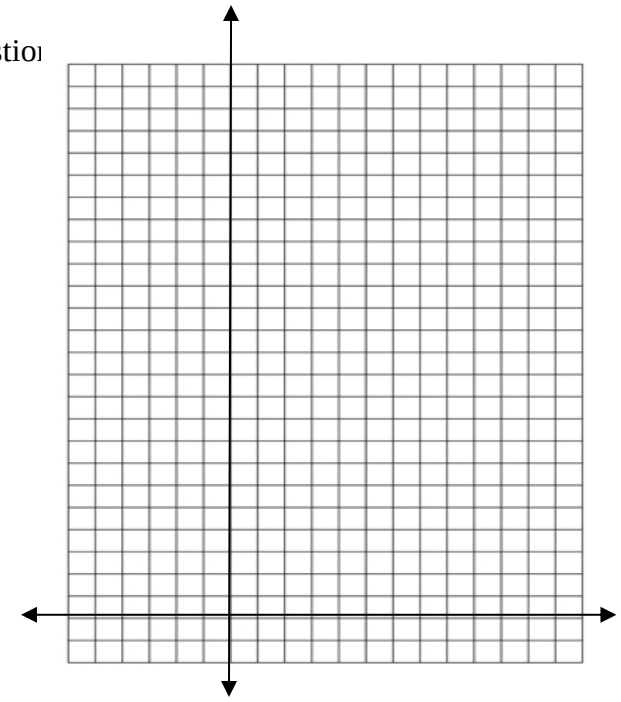
Math 3 – Unit 2 Test Review Name _____ Date_____

1. Graph the function $y = 3^{x+2}$ and answer the following questio



Domain: _____

Range: _____

y - int: _____

Asymptote: _____

End Behavior:
As $x \to -\infty, y \to$ _____

As $x \to \infty, y \to$ _____

2. Answer the following questions for the function: $y = -\frac{1}{2}(4)^{x+2} - 3$.

Parent Function: _____ Growth or Decay? _____

Transformations:

1. _____ 3. _____

2. _____ 4. _____

Evaluate each logarithm.

3. $log\ _3 10$ 4. $log_2 \frac{5}{10}$

3. _____

4. _____

Convert to logarithmic form.

5. $3^x = 21$ 6. $5^{x+1} = 10$

5. _____

6. _____

Convert to exponential form.

7. $log_{10}(x-2) = 3$ 8. $log_2 4 = x$

7. _____

8. _____

9. The population of sea lions in the North Pole can be modeled by the equation $y = 32(0.71)^t$. Find:
a) the initial population and
b) the rate of **decay** (as a percent)

9. a) _____

b) _____

10. A new car that sells for $25,000 **depreciates** 3.5% each year.

a) Write a function that models the value of the car.
b) Find the value of the car after 6 years.

10. a)._____

b)_____

11. Jason invests $1000 in an account that pays 4% interest **compounded monthly**. How much interest will be accumulated after 3 years?

11. _____

12. In 1999, Grandma Jo invested $5,000 in a savings account, for your college tuition. It pays 4.5% interest **compounded weekly**, what will the value of the fund be in 2021?

12. _____

13. The population of China is rapidly **increasing** at a rate of 5.2% each year. If the population in 1800 was 120,000, in what year will the population reach 250,000?

13. _____

Use exponential regression to write an exponential function for this situation.

14. Jean invested $380 in stocks. Over the next 5 years, the value of her investment grew, as shown in the accompanying table. Write the exponential regression equation for this set of data, rounding all values to the hundredths place. 14. _____

Years Since Investment (x)	Value of Stock, in Dollars (y)
0	380
1	395
2	411
3	427
4	445
5	462

Write each expression as a single logarithm. (CONDENSE)

15. $4 \log x - 2 \log y$ 15. _____

16. $3 \log_b 5 + 2 \log_b 3$ 16. _____

Expand each logarithm completely.

17. $\log_4 10a^2$ 17. _____

18. $\log_3 \frac{2}{x^3}$ 18. _____

19-23: Solve each equation for x. Round to the nearest hundredth. SHOW YOUR WORK.

19. Solve $6^{3x} = 36^{x+5}$. 19. _____

20. Solve: $25^{x} = 125^{x+2}$ 20. _____

21. Solve: $lnx = 5$. 21. _____

22. Solve: $e^{x+5} = 20$ 22. _____

23. Solve $\ln 3 + \ln(x - 1) = \ln 18$. 23. _____

24. $3 \ln 2 + \ln x = \ln 16$ 24. _____

25. Solve $\log_3(9x) = 2$. 25. _____