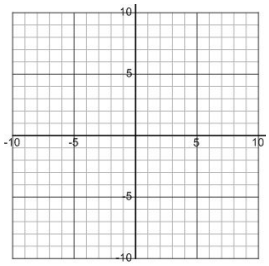
Name: Class Period:

SM3 WS 7.R - Test 7 Remediation Review (Exponentials and Logs)
No Calculator Logs _____/135. If your score was less than 94 you must do problems 3-12
Logs w/ Calculator _____/190. If your score was less than 133 you must do 1-2, 14-22, 24-26
Review ____/50 If your score was less than 35 you must do 13, 23

Section 1: No Calculator. Show all your work to receive full credit. Follow the directions for each problem.

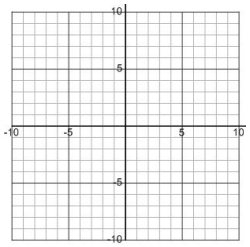
1. Graph: $f(x) = 2(3)^x - 5$



a. *Equation* of asymptote:

b. Domain
Range

2. Graph: $g(x) = log_2(x+3)$



a. *Equation* of asymptote:

B. Domain

Range

3. Condense. Write the expression as a single logarithm: $\frac{1}{2}log_7 y - 3log_7 x$

4. Expand the logarithm: $log_3(5x^2)$

5. Solve for x: $log(10x) = 4$

6. Evaluate the expression: $log_4\left(\frac{1}{64}\right)$

7. Evaluate the expression: $log_6 1 + log_7 7$

8. Evaluate the expression: $log_2 96 - \frac{1}{2}log_2 9$

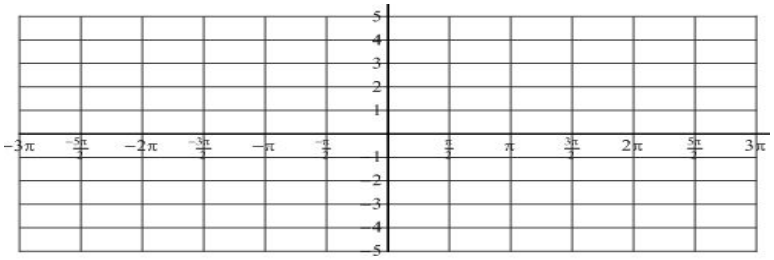
9. Evaluate the expression: $2log_6 2 + log_6 9$

10. Solve for x: $log(2x+7) = 0$

11. Solve for x: $3log_3 x - 6C = 9$

12. Solve for x: $log_3 64x - log_3 2 - log_3 16 = 0$

13. State Write the equation for a graph with double the amplitude, and a period that is ½ the speed or twice the length, then, graph at least 2 complete cycles. $y = -sin(2x) + 1$



Section 2: Calculator. Show all your work to receive full credit. Follow the directions for each problem.
Problems (14-17): Solve each equation algebraically. Round your answer to 3 decimal places. (Remember to check for extraneous solutions.)

14. $17^{3x} + 1 = 42$

15. $e^{5x} = 72$

16. $ln(x+7) = 3$

17. $2log_6 x - log_6 2 = 4$

Problems (18-23): Follow the directions for each question.

18. The amount of money in an account with continuously compounded interest is given by the formula: $A = Pe^{rt}$. How long will it take for an amount of money to double if interest is compounded continuously at 4.1%. Round to the nearest tenth.

a. 4.8 years
b. 16.9 years
c. 1.7 years
d. 0.7 years

19. The table shows some earthquakes in recent years.

Location	Date	Richter Scale
Italy	10/31/2002	5.9
El Salvador	2/13/2001	6.6
Afghanistan	5/30/1998	6.9
Mexico	1/22/2003	7.6
Peru	6/23/2001	8.1

How much more intense was the earthquake in Peru than the earthquake in El Salvador? (Hint: $R = logI$)

a. about 45 times as intense
b. about 31.6 times as intense
c. about 64.99 times as intense
d. about 1.5 times as intense

20. A 40 gram sample of a substance doubles in size once every 2.6 months.

a. How much of the substance will there be in 2 years?

b. How long until there are 500,000 grams of the substance?

21. The population growth of a city can be modeled by the equation $P = 250e^{0.047t}$, where P is the **population in thousands** and t is the years since 1995. In what year does the model predict that the city reaches a population of approximately 556,000 people

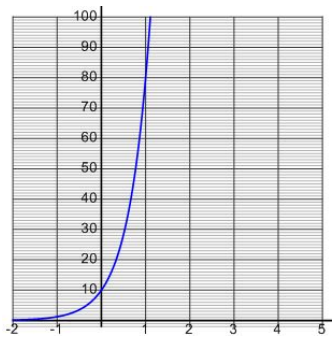
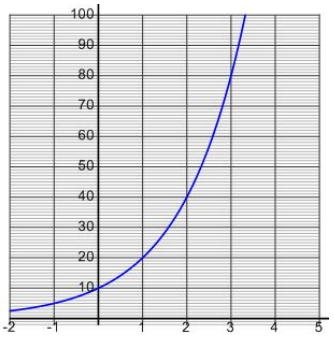
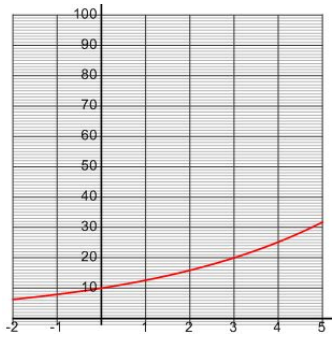
a. 2012
b. 2014
c. 2016
d. 2018

22. *The pH of a liquid is a measure of how acidic or basic it is. The concentration of hydrogen ions in a liquid is labeled* $[H^+]$. *Use the formula* $pH = -log[H^+]$ *to answer questions about pH.*
Find the pH level, to the nearest tenth, of a liquid with $[H^+]$ about 2.9×10^{-3}.

a. 3.5 B. 3.0 C. -2.5 d. 2.5

23. Find the value of ***a*** that will make $x-4$ a factor of the polynomial $y = 3x^3 - 7x^2 - 18x + a$.

Problems (24-26): Match the equation with its correct table, graph, and scenario.

Equation	Graph	Table	Scenario
24. $y = 10(2)^{3t}$	A. 	D. x | y 0 | 10 1 | 20 2 | 40 3 | 80	G. There are 10 bugs and they double once every 3 days.
25. $y = 10(2)^{t/3}$	B. 	E. x | y 0 | 10 1 | 80 2 | 640 3 | 5120	H. There are 10 grams of a substance that doubles 3 times a week.
26. $y = 10(2)^{t}$	C. 	F. x | y 0 | 10 1 | 12.6 2 | 15.9 3 | 20	I. There are 10 chickens and they double once every year.

Answer Key