SM3   Unit 4 Remediation Packet

Essential Standard Do 1– 4

1. Fifteen bacteria are Doubling one every 4.7 days. How long until there are 2000 bacteria?	**2. Use change of base formula to evaluate:** $log\ _3 99$
3. Change to log form: $4\ =\ 16^{1/2}$	4. Solve: $log\ _5(x-4)\ =\ 3$

No Calculator 5 – 13

5. Evaluate: $3Log\ _5 5\ -\ log\ _8 1$	6. Evaluate: $log\ _3(1/2)+\ log\ _3 54$
7. *Expand.* $log_2 \frac{x^7 y^4}{\sqrt{w}}$	8. Solve for x: $\frac{1}{2}ln(10x)+5=9$
9. Solve for x: $2log\ _3(x+4)\ -\ 6\ =\ 4C$	10. Solve for x: $log_3(x+7)=2$
11. Condense. $ln\ x+3lnw-4ln\ y-\frac{1}{2}lnz$	12. Evaluate without a calculator. $log_4 32-log_4 2$

13. Evaluate: $\log_5\left(\frac{1}{625}\right)$	14. Evaluate without a calculator. $\ln e^{3.2} + 3\log_2 1$

Calculator 14 –
Directions: Solve each equation algebraically. Use the properties of logarithms as needed. Round your answer to 3 decimal places. (Check for extraneous solutions).

15. $\log_2 3x + \log_2 7 = 9$	16. $\log_9(x-2) - \log_9 x - \log_9 8 = 0$

17. Only 500 grizzly bears still exist in the wild. Their population is decreasing at a rate of 12% each year.

    a. What is the equation for this situation?

    b. How many grizzlies will remain in the wild in 20 years?

18–19. Graph each equation below. For each graph, state the reference point, the equation of the asymptote, and the domain.

18) $f(x) = 2 \cdot \left(\frac{1}{3}\right)^x - 2$

19) $g(x) = \log(x+1) + 2$
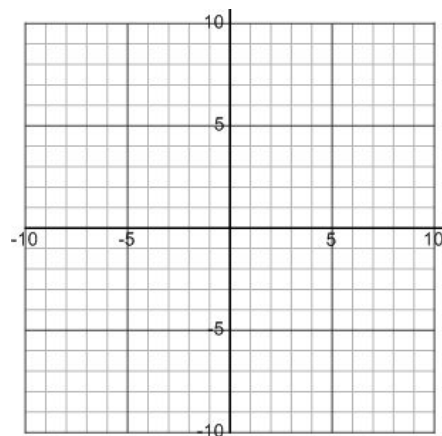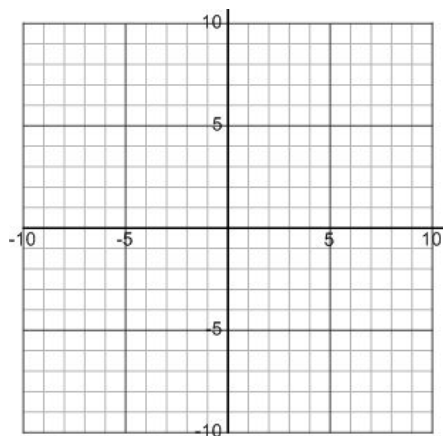
20. *Solve the equation algebraically. Verify your answer on your graphing calculator.* $2(8)^{3x} = 82$	21. *Solve for x. Fill in the lines to complete the answer.* $\frac{1}{2}e^{x/2} = 5$ $X = \underline{\quad}$ ln $\underline{\quad}$

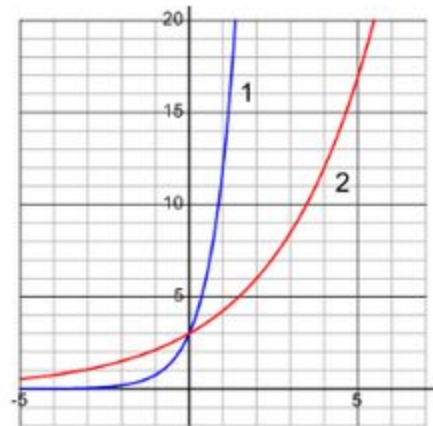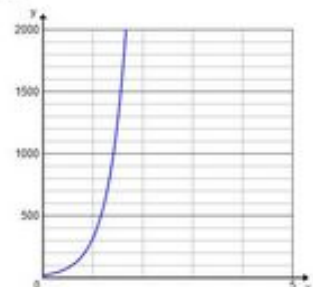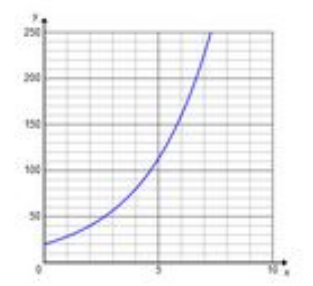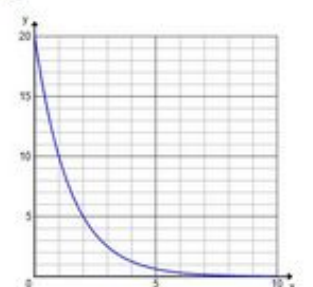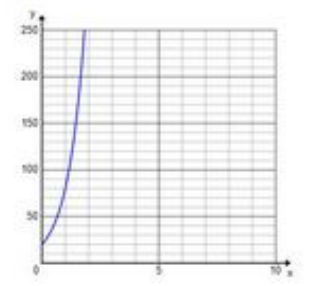| 22. You invest \$1000 in savings. How much money will you have after 10 years if the account: A. Is compounded once every 2 years @ 12%?	24. You invest \$1000 in savings. How much money will you have after 10 years if the account: B. Is compounded continuously @ 4.3%?

23. Match each equation with the correct graph. Explain how you know.

  a. $y = 3(2)^{2x}$

  b. $y = 3(2)^{x/2}$

Match the Equation, Graph, Table, & Scenario.

Equations	Graphs	Tables	Scenarios
25. $A = 20(2)^{2t}$	**A**	**E**	**I.** You have 20 chicken pox marks on your skin, and they double 4 times a day.

25. $A = 20(2)^{2t}$

26. $A = 20\left(\frac{1}{2}\right)^{t}$

27. $A = 20(2)^{\frac{t}{2}}$

28. $A = 20(2)^{4t}$

Graphs

A

B

C

D

Tables

E

t	A
0	20
1	10
2	5
3	2.5
4	1.25

F

t	A
0	20
2	40
4	80
6	160
8	320

G

t	A
0	20
0.25	40
0.5	80
0.75	160
1	320
1.25	640

H

t	A
0	20
.5	40
1	80
1.5	160
2	320

Scenarios

I. You have 20 chicken pox marks on your skin, and they double 4 times a day.

J. There are 20mg of a substance, and it doubles twice a year.

K. There are 20 bugs and they double once every 2 years.

L. You have $20 and you spend half of it every day.