Algebra 2--H
Chapter 8 Review

HW #____
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Name_____

Date_____

Solve for x. Give exact answers. NO CALCULATORS, NO DECIMALS.

1. $\log_x \frac{1}{25} = \frac{-2}{3}$

2. $\log_{1/16} x = \frac{5}{4}$

3. $\ln(2x+5) + \ln(x+2) = \ln(4x+13)$

4. $2\log x - \log 4 = 2$

5. $\left(\frac{1}{4}\right)^{1-4x} = 32^{x-1}$

Solve for x. Round answers to the nearest hundredth.

6. $50^{2x-1} + 7 = 407$

7. $2e^{3x+5} = 14$

8. $5^{2x+1} = 2^{4x-3}$

9. Solve for x. Leave your answer in terms of "e". $\ln(x+2) = 5$

10. Find the inverse of $y = \ln 9x^2$. Express your answer in terms of "e".

Evaluate. Give exact answers. NO CALCULATORS, NO DECIMALS.

11. $4\log_4 2 - \log_{27} 3$

12. $\log_{\sqrt{6}} 4 + 2\log_{\sqrt{6}} 3$

13. $3^{\log_3 6x}$

Evaluate. Round answers to the nearest hundredth.

14. $\log_3 8$

15. $\ln 18 - \frac{1}{2}\ln 36$

Condense to a single simplified logarithm.

16. $3\left[\log(x-2) + 2\log(x+1) - \log(x+2) - 5\log(x-1)\right]$

17. $3\ln 4 + 6$

18. Expand completely and simplify. $\log_3\left(\frac{9A^2}{\sqrt[5]{B^2}}\right)$

19. If $\log_a 2 = x$ and $\log_a 3 = y$, find $\log_a \sqrt[3]{\frac{2}{9}}$.

Simplify to a single power of e.

20. $\frac{\left(e^{-3} \cdot e^{4x}\right)^2}{e^5}$

21. $\sqrt[4]{625e^{12}}$

22. Write an exponential function $y = ab^x$ (with $b > 0$) that contains $(1, 16)$ and $(3, 36)$.

23. Write a power function $y = ax^b$ that contains the points (2, 28) and (8, 192). Round decimals to thousandths.

24. The epidemic began with 30 persons infected. The number of infected persons increased by 47% each day after the epidemic began.

    (a) Write an exponential growth model for the number of infected persons (I), t days after the epidemic began.

    (b) How many persons were infected 1 week after the epidemic began?

    (c) To the nearest day, about how many days did it take for 6,600 persons to become infected?

25. The output power P (in watts) of a satellite is given by $P = 50e^{\frac{-t}{250}}$, where t is the number of days that the satellite has been in operation.

    (a) To the nearest watt, compute the power output of the satellite on the 45th day.

    (b) If the equipment aboard this satellite requires 15 watts of power, about how long, to the nearest day, will the satellite continue to operate ?

26. If you invest \$10,000 with an annual interest rate of 3.5% compounded semiannually, how much will your investment be worth at the end of 2 years? Use the formula $A = P\left(1+\frac{r}{n}\right)^{nt}$ and round the answer to the nearest cent.

Answers: 1. 125 2. $\frac{1}{32}$ 3. $\frac{1}{2}$ 4. 20 5. $-\frac{1}{2}$ 6. 1.27 7. -1.02

8. -8.27 9. e^5-2 10. $\frac{e^{x/2}}{3}$ 11. $1\frac{2}{3}$ 12. 4 13. 6x 14. 1.89

15. 1.10 16. $\log\frac{(x-2)^3(x+1)^6}{(x+2)^3(x-1)^{15}}$ 17. $\ln 64e^6$ 18. $2+2\log_3 A-\frac{2}{5}\log_3 B$

19. $\frac{1}{3}x-\frac{2}{3}y$ 20. e^{8x-11} 21. $5e^3$ 22. $y=\frac{32}{3}\left(\frac{3}{2}\right)^x$

23. $y = 10.691x^{1.389}$ 24. (a) $I = 30(1.47)^t$ (b) 445 persons (c) 14 days

25. (a) 42 watts (b) 301 days 26. \$10718.59