A2H – Ch 4 Review Worksheet

State the domain.

1. $f(x)=\frac{1}{2}(5)^{4-x}$	2. $f(x)=5\log_4(3x-7)+1$

Sketch the graph and state the domain and range.

3. $f(x)=2\left(\frac{4}{3}\right)^{x+2}-3$	4. $f(x)=\left(\frac{1}{2}\right)^{x-4}+1$	5. $f(x)=3\log x-4$	6. $f(x)=5-\log_3(x+1)$

Expand.

7. $\log_5\left(\frac{x^3-8}{y^6z^8}\right)$	8. $\log_4\sqrt{\frac{32(x^2-4)^5}{y^3}}$

Condense.

9. $2\log_3 4-3\log_3 x-4\log_3(y+z)$	10. $2\ln 6+3\ln 4-5\ln 3$

Simplify.

11. $\log_4 64$	12. $\log_3(-3)$	13. $\log_{27} 9$
14. $\ln 1$	15. $\log(1{,}000)$	16. $\log_4 128-\log_4 8$
17. $\log_3 243^2$	18. $7^{\log_7 14}$	19. $\log_2 256-\log_5 625+\ln e$

Solve.

20. $3^{x-2}=729^{\frac{x}{2}}$	21. $7^{5-x}+8=1$	22. $7^{5-x}-8=1$	23. $6^{x-1}=11^x$
24. $7\cdot 7^{2x}-15\cdot 7^x+2=0$		25. $\log 6+2\log x-\log 2x=1$	
26. $\log_5(x+3)+\log_5(x-3)=\log_5 8x$		27. $\log_4(\log_2(\log_3 x))=\frac{1}{2}$	

28. If $\log_3 5\approx 1.465$ and $\log_3 2\approx 0.6309$, what is the approximate value of $\log_3 30$?

29. Let $a=\log 2$, $b=\log 3$, and $c=\log 5$. Rewrite approximate value of $\log\frac{5}{6}$ in terms of a, b, and c.

30. If $f(x)=e^x$, then what is the value of $f^{-1}(7)$?

31. (Calculator) Evaluate to three decimal places: $\log_5 27$

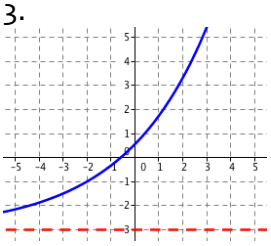
32. (Calculator) You put $7500 in a savings account paying 3% interest.

a) Assuming there are no deposits or withdrawals, how much is in your account if the interest is compounded continuously for 4 years.
b) Assuming there are no deposits or withdrawals, how much is in your account if the interest is compounded bimonthly for 4 years.
c) The bank across the street offers a different interest rate and compounds the interest monthly. If the bank promises that the investment will double in 20 years, what interest rate is the bank across the street offering? Round to three decimal places.
d) How long will it take for your money to quadruple if your money is compounded monthly? Round to three decimal places.

33. (Calculator) A virus spreads through a network of computers such that each minute, 25% more computers are infected. If the virus began at only one computer, how many computers will be affected after 1 hour? Round to the nearest computer.

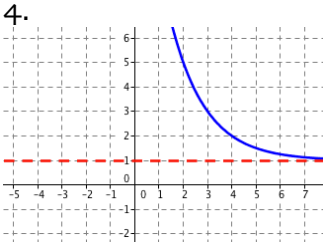
34. (Calculator) The clothing retailer "Forever 16" marks clothing items on clearance if they do not sell within 2 weeks. After two weeks the price of each item not sold is marked down weekly by 15%. What is the clearance price of a shirt originally sold for $15.99 after being in the store for 4 weeks?

ANSWERS

1. $(-\infty,\infty)$
2. $\left(\frac{7}{3},\infty\right)$
3. 

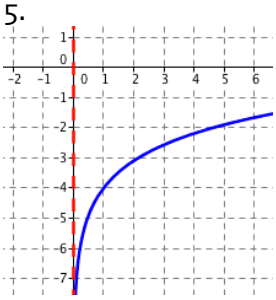
D: $(-\infty,\infty)$

R: $(-3,\infty)$

4. 

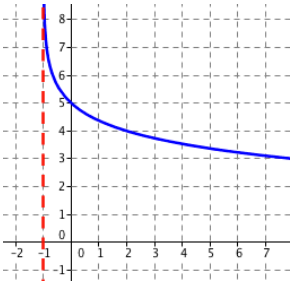
D: $(-\infty,\infty)$

R: $(1,\infty)$

5. 

D: $(0,\infty)$

R: $(-\infty,\infty)$

6. 

D: $(-1,\infty)$

R: $(-\infty,\infty)$

7. $\log_5(x-2)+\log_5\left(x^2+2x+4\right)$
$-6\log_5 y-8\log_5 z$

8. $\frac{5}{4}+\frac{5}{2}\log_4(x+2)+\frac{5}{2}\log_4(x-2)$
$-\frac{3}{2}\log_4 y$

9. $\log_3\left(\frac{16}{x^3(y+z)^4}\right)$

10. $\ln\left(\frac{256}{27}\right)$

11. 3
12. undefined
13. 2/3
14. 0
15. 3
16. 2
17. 10
18. 14
19. 5
20. -1
21. no solution
22. $5-\log_7 9$
23. $\frac{\log 6}{\log 6-\log 11}$
24. -1, $\log_7 2$
25. 10/3
26. 9
27. 81
28. 3.096
29. c-a-b
30. $\ln 7$
31. 2.048
32.
    a. $8456.23
    b. $8453.70
    c. 3.471%
    d. 46.268 years
33. 652,530 computers
34. $9.82