Name Key Date _____ Period _____

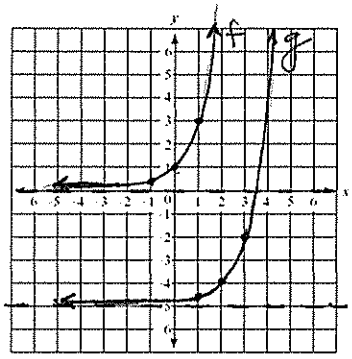
Ch. 6 Review – Part 2 (Sections 6.4-6.7)

6.4 Transformations of Exponential and Logarithmic Functions *(pp. 317–324)*

#1-2: Describe the transformation of f represented by g. Then graph both functions.

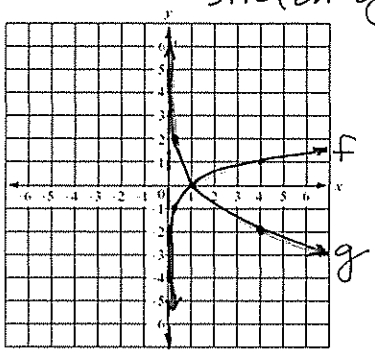
1. $f(x) = 3^x$, $g(x) = 3^{x-2} - 5$

shift 2 units right and 5 units down



2. $f(x) = \log_4 x$, $g(x) = -2\log_4 x$

Reflect across x-axis, vertical stretch by a factor of 2



#3-4: Write a rule for g.

3. Let the graph of g be a vertical stretch by a factor of 3, followed by a translation 6 units left and 3 units up of the graph of $f(x) = e^x$.

$g(x) = 3e^{x+6} + 3$

4. Let the graph of g be a translation 2 units down, followed by a reflection in the y-axis of the graph of $f(x) = \log x$.

$g(x) = \log(-x) - 2$

6.5 Properties of Logarithms *(pp. 327–332)*

#5-7: Expand the logarithmic expression.

5. $\log_8 3xy$

$\log_8 3 + \log_8 x + \log_8 y$

6. $\ln 6x^9$

$\ln 6 + 9\ln x$

7. $\log_3 \frac{10x^5}{y^2}$

$\log_3 10 + 5\log_3 x - 2\log_3 y$

#8-10: Condense the logarithmic expression.

8. $3\log_7 2 + \log_7 6$

$\log_7 48$

9. $\frac{1}{2}\log_2 11 - 5\log_2 x$

$\log_2 \frac{\sqrt{11}}{x^5}$

10. $2\ln x + 5\ln 2 - \ln 3$

$\ln \frac{32x^2}{3}$

#11-12: Use $\log_3 2 \approx 0.631$ and $\log_3 5 \approx 1.465$ to evaluate the logarithm.

11. $\log_3 50$

3.561

12. $\log_3 \frac{5}{8}$

-0.428

#13-14: Use the change-of-base formula to evaluate the logarithm. Round answer to three decimal places.

13. $\log_7 52$

2.031

14. $\log_{24} 15$

0.852

6.6 Solving Exponential and Logarithmic Equations *(pp. 333–340)*

#15-16: Solve the exponential equation. For #16, round your answer to three decimal places.

15. $27^{x-2} = \left(\frac{1}{9}\right)^{x+1}$

$x = \frac{4}{5}$

16. $5^x = 8$

$x = 1.292$

#17-18: Solve the logarithmic equation.

17. $\log_3(2x-5) = 2$

$x = 7$

18. $\log_2 x + \log_2(x-6) = 4$

$x = 8$

6.7 Modeling with Exponential and Logarithmic Functions *(pp. 341–348)*

#19-21: Write an exponential function, $y=a(b)^x$, whose graph passes through the given points.

19. (2, 12) and (3, 24)

$y = 3(2)^x$

20. (1, 2) and (3, 50)

$y = \frac{2}{5}(5)^x$

21. (3, 8) and (5, 2)

$y = 64\left(\frac{1}{2}\right)^x$

Remember to review Quiz #1 and make sure you know how to do ALL of the problems! The answer keys to Quiz#1 are posted in the SchoolLoop course locker so that you can check your answers.