

Math 154A-3  
Review for Exam #2  
Chapter 12, Sections 1-7  
Morrow, November 2, 2011

1. Given  $f(x) = 6x-5$  and  $g(x) = x^2$ , find  $f[g(x)]$  and simplify.
  
  
  
  
  
  
  
  
  
  
2. Given  $f(x) = 3x$ ,  $g(x) = x^2$ ,  $h(x) = x+1$ , write  $m(x)$  as a composition of  $f$ ,  $g$  and  $h$  so that  $m(x) = (x+1)^2$
  
  
  
  
  
  
  
  
  
  
3. How do you tell if a graph represents a one-to-one function?
  
  
  
  
  
  
  
  
  
  
4. What do we call the method used for finding the inverse of a function?
  
  
  
  
  
  
  
  
  
  
5. Use the method to find the inverse of  $f(x) = \frac{7}{x+2}$
  
  
  
  
  
  
  
  
  
  
6. Plotted graphs of a function and its inverse reflect across what line?
  
  
  
  
  
  
  
  
  
  
7. Graph  $y = x^3$  and its inverse on the same pair of axes.
  
  
  
  
  
  
  
  
  
  
8. What is an exponential function? Write its standard form. What are its domain and range?

9. Verify that  $f(x) = 3x+5$  and  $\frac{x-5}{3}$  are inverses.

10. a) Solve  $(1/2)^x = 8^{3x-1}$

b)  $5^{2x} = 7$

For a), give the exact answer. For b) give both exact and approximate answers.

11. Simplify and write as one log:  $5\log_3(x+2) - (1/4)\log_3(x) + \log_3(9) + 2$

12. Expand as much as possible:  $\ln(5x^3)/x-4$

13. Graph  $f(x) = \log_3(x)$ . Is there an asymptote? If so, what is it?

14. Solve  $\log_2[x(x+9)] = 5$  Give both exact and approximate solutions.

14. The population size,  $y$ , of a community of lemmings is described by the equation  $y = y_0 e^{0.15t}$ . In this formula,  $t$  represents time in months, and  $y_0$  is the initial population at time 0. Estimate the population after 6 months, if the initial population of lemmings was 5,000.