Spring 2012 Math 151

Week in Review # 7
sections: 4.2, 4.3, 4.4
courtesy: Joe Kahlig

Section 4.2

1. Determin if the function is one-to-one.
   $y = \sqrt[3]{x^2 + 1}$

2. Show that the function is one-to-one and find the inverse.

   (a) $f(x) = \dfrac{1 - 4x}{3x + 5}$

   (b) $f(x) = \sqrt[3]{x^3 + 7}$

3. Assume that the function f is a one-to-one function with inverse g. Compute a formula for $g'(x)$ based on f.

4. If g is the inverse of the function f, compute $g'(2)$.
   $f(x) = x^5 - x^3 + 2x$

5. If g is the inverse of the function f, compute $g'(6)$.
   $f(x) = 5 + xe^{(x^2 - 2x + 1)}$

Section 4.3

6. Evaluate: $4^{2 \log_4 9}$

7. Find the domain of this function.
   $y = \ln(x^2 - 9)$

8. Use the fact that $\log_a 2 = 0.38$, $\log_a 3 = 0.63$, and $\log_a 5 = 0.88$ to compute these logarithms.

   (a) $\log_a 20$

   (b) $\log_a \left(\dfrac{81}{a^3} \right)$

9. Solve for x.

   (a) $4e^{(3x+2)} = 12$

   (b) $5(7)^{4x} = 3$

   (c) $\log(x - 2) + \log(x + 4) = \log 7$

   (d) $\log_x(6x - 5) = 2$

   (e) $\log_{27}(4 \log_2(5x - 4) - 17) = \frac{1}{3}$

Section 4.4

For problem 10-16, find the derivatives of these functions.

10. $y = \log_5(7 - 4x) + 3^{sec(x)}$

11. $y = [\ln (x^4 + 5x)]^{\frac{4}{3}}$

12. $y = \ln(\ln(3x + 1))$

13. $y = 7^{x^2} \log(x^4 + 1)$

14. $y = \ln \sqrt{\dfrac{x^2 + 5}{5x - 8}}$

15. $y = (x^2 + 3)^{\cos(2x)}$

16. $y = \dfrac{(2x^6 + 4)^5}{(7x^2 + 5)^3}$