

*Math 251*  
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*Winter 2006*  
*Review for Exam 2*

**Chapter 3 Review from the Textbook:**

- Concept Check: 1, 2 (a-n), 4, 5
- True False: all except 10.
- Exercises: 1-42, 49-51, 54-59, 63, 65-79, 81-82, 87-88, 91-95, 98  
(in exercises 1-42 assume all variables except  $x$ ,  $y$ ,  $t$ , and  $\theta$  are constant)
- Harder problems: 104, 105, 106 from the exercises.

**A few other exercises:**

1. Use implicit differentiation to prove the following

(a)  $\frac{d}{dx}(\arcsin(x)) = \frac{1}{\sqrt{1-x^2}}$

(b)  $\frac{d}{dx}(\arccos(x)) = \frac{-1}{\sqrt{1-x^2}}$

(c)  $\frac{d}{dx}(\arctan(x)) = \frac{1}{1+x^2}$

(d)  $\frac{d}{dx}(\ln(x)) = \frac{1}{x}$

2. Use logarithmic differentiation to prove the power rule  $\frac{d}{dx}(x^n) = nx^{n-1}$  for any real number  $n$ .
3. Review section 4.1 and work through some problems like 31 – 62 from section 4.1.
4. WORK ON USING CORRECT NOTATION!!!!