

Below is a selection of problems related to sections 3.5 to 4.1. These problems will not be collected or graded. However, you should understand how to work each of these problems. You should begin working on these problems in groups in recitation. You will probably want to finish these problems outside of class. If you have questions, please ask your TA or instructor. If you find a problem difficult, consider working similar problems from the text for additional practice.

Announcement: Brown will be out of town on 9–13 November. Jeff Sykes will lecture for this week. All classes will meet as scheduled.

1. Here are the last two written homework assignments for Chapter 3 and section 4.1.
 - Due Wed, 11 November 1998. §3.6 # 22, 46 §3.7 # 22, 30.
 - Due Monday, 16 November 1998. §3.8 #16, §4.1#12, 24.
2. §3.5 #1, 3, 7–30 (work as many as you need to feel confident with rules of differentiation), 31, 43, 45, 47, 50, 51, 61, 63, 67a) (Don't use induction on 67a), I think.)
3. §3.6 #3, 11, 13, 15, 21, 33, 37, 45.=20
4. Let $y = f(x)$ be the inverse function for $x = \sin y$ where the domain of $\sin y$ has been restricted to the interval $(\pi/2, 3\pi/2)$. Note that f is not the standard inverse function, \sin^{-1} .
 - (a) Sketch the graph of $\sin x$, for x in $(\pi/2, 3\pi/2)$ and the graph of the inverse function. Based on your graph, is f' positive or negative? (Hint: Remember that if we know the graph of a function, the graph of the inverse function is found by reflecting in the line $y = x$.)
 - (b) Use that $x = \sin(f(x))$ and implicit differentiation to find the derivative $f'(x)$.
 - (c) Your answer to the previous part may contain a trigonometric function and $f(x)$. Use the Pythagorean identity, $\cos^2 u + \sin^2 u = 1$, to express f' in terms of x . Hint: Be careful when you take the square root.
 - (d) Is your expression for f' different from the expression for the derivative of \sin^{-1} found on page 244? Explain why.
5. §3.7 #3, 5, 7, 9 (simplify first), 15, 23, 25, 29.
6. §3.8 #1, 3, 7, 9, 11, 15.
7. §4.1 #1, 3, 5, 7, 9, 11, 13, 23, 25.