MATH 550 - Spring 2013
Homework (as of April 17, 2013)

section 5.1, page 269: 1ad, 3cd (I believe that "log" means "ln" here), 6, 7, 8b, 9.

section 5.2, page 282: 1b, 12, 13, 14, 15, 17, 18.

section 5.3, page 288: 1, 3ac, 5, 7, 9, 11, 20 (Do this problem any legitimate way).

section 5.4, page 293: 2, 3ac, 5, 6, 7, 9, 12, 17, 18, 19 (In 19, one needs to use the technique of "differentiation under the integral sign". I will do it in class. You can look it up in wikipedia. It says that if $f(x, y)$ and $f_x(x, y)$ are continuous in some open set containing the rectangle $[x_0, x_1] \times [y_0, y_1]$, then

$$\frac{d}{dx}\int_{y_0}^{y_1} f(x, y)dy = \int_{y_0}^{y_1} f_x(x, y)dy$$

for all x in $[x_0, x_1]$. One also needs the chain rule.)

section 5.5, page 302: 1, 7, 11, 13, 18, 19, 24b, 25, 26, 27, 28

section 6.1, page 313: 1, 2 (There is a silly typo in the statement of 2. The function T goes from $\mathbb{R}^3$ to $\mathbb{R}^3$ rather than $\mathbb{R}^2 \to \mathbb{R}^2$.), 3, 6, 7, 8. The following problems are not due until Tuesday Feb. 12: 9, 11.

section 6.2, page 327: Do these before Feb. 21: 3 (I think their answer to 3 is wrong.), 4, 5, 6, 7, 8, 9, 10, 11, 13. Here is the rest of the assignment: 15, 17, 19, 22, 23, 25, 28, 29, 33, 35 (describe R), 36.

section 6.3, page 337: 1, 3, 5, 7, 9, 13, 15, 17, 22, 23, 25 (of course, $r < a$). Here are a few comments about problem 23: First of all, it is not a hard problem. Secondly, there is a small typo on page 337, line 10. It should say that $V = -GMm/R$. (The minus sign is missing.) Third, the first answer in the back is reported in units involving kilograms, rather than grams. Finally, the second answer in the back surely should involve 3.14 rather than 3.04.

section 6.4, page 345: 1, 3, 5, 7, 9, 11, 13, 15, 17, 20.

section 7.1, page 356: 1, 5, 9, 11, 14, 15 (In part (a), you are supposed to use tricks to find the answer. In part (b), you are supposed to do the problem the usual way. The back of the book tells an inconsequntial lie. The curve starts and ends at $(1, 1)$ and not $(0, 0)$. This is obvious. The point they are making is correct, but they are confused about where the starting and ending point is.), 17, 25

section 7.2, page 373: 1 (I believe that the correct answer is -2.), 3, 5, 7, 9, 13, 14, 17, 18, 19, 20, 21 (You need not worry about the Frenet formulas.).

section 7.3, page 381: 1, 5, 7, 8, 9, 11, 17a, 22a, 23a.

section 7.4, page 391: 1, 2, 3, 4 (I am not interested in formula (6), but I am interested in formula (1) (or (3)) as well as section 6.3, number 24.), 10, 11, 14, 15, 16.

section 7.5, page 398: 1, 5, 9, 17, 23, 24 ($A(\Phi)$ is the same as $A(S)$.), 25 (conditions (a) and (b) are problem 24, not 16).

section 7.6, page 411: 1, 3b (my answer is 108π), 5, 19, 21.