Math 53 Homework 4

Due Tuesday 9/27/11 in section

(The problems in parentheses are for extra practice and optional. Only turn in the underlined problems.)

Monday 9/19 – Functions of several variables

• **Read:** sections 14.1; also 12.6 to the bottom of p. 807; and 14.2 (skip the theory, focus on examples 1–3, the definition of continuity, examples 7–8).

• Work: 14.1: (11), (23), <u>26</u>, <u>29</u>, (30), <u>32</u>, <u>34</u>, (35), (39), <u>42</u>, <u>55</u>, (57), <u>62</u>, (66), (74). 14.2: (4), (7), <u>9</u>, <u>13</u>, (27), (33), <u>39</u>, (43).

Wednesday 9/21 – Partial derivatives, tangent plane, linear approximation

- Read: section 14.3 to bottom of p. 886.
- Work: 14.3: (5), $\underline{10}$, (11), $\underline{21}$, (35), (39), $\underline{40}$, $\underline{45}$, (49), $\underline{51}$, (59), $\underline{73}$, $\underline{75}$, $\underline{82}$, $\underline{87}$.

Friday 9/23 – Tangent plane, linear approximation

• **Read:** section 14.4^{\dagger} .

[†] WARNING: Please don't mix differentials like dz with differences like Δx or Δy . Differentials don't take a numerical value, and " $dx = \Delta x$ " does not make mathematical sense. See lecture.

• Work: 14.4: (1), 5, 17, (19), 21, (25), 28, 33^{\dagger} , 38^{\dagger} , (39).

† Whenever the book says "use differentials to estimate ...", read "use linear approximation to estimate ...".