Math 126C **Second Midterm** **Spring 2014**

Your Name

Your Signature

Student ID #

Section (circle one) 10:30 CA 11:30 CB

Problem	Total Points	Score
1	16	
2	9	
3	8	
4	8	
5	9	
Total	50	

- This exam is closed book. You may use one $8\frac{1}{2} \times 11$ sheet of notes.
- Graphing calculators are not allowed.
- In order to receive credit, you must show your work. Explain why your answers are correct.
- If you use a trial and error (or guess and check) method when a calculus method is available, you will not receive full credit.
- **Place a box around $\boxed{\text{YOUR FINAL ANSWER}}$ to each question.**
- If you need more room, use the backs of the pages and indicate to the reader that you have done so.
- Raise your hand if you have a question.

1 (16 points) Evaluate the following double integrals.

(a) (8 points) $\iint_R \frac{x}{1+xy}\,dA, \quad R = [0,1] \times [0,2]$

(b) (8 points) $\iint_D xy^2\,dA, \quad D$ is the triangle with vertices $(0,0)$, $(0,2)$ and $(1,2)$.

2 (9 points) Let $f(x, y) = x^2 - y^2 + 4\ln(xy)$. Find all points on the surface where the tangent plane is parallel to the plane $6x = 2y + z$.

3 (8 points) Compute the equation of the tangent line to the curve $r = 1 + 2\sin\theta$ at the point where $\theta = \pi/6$. Give your answer in exact form.

4 (8 points) Let $\mathbf{r}(t) = 3t\,\mathbf{i} + 3t^2\,\mathbf{j} + 2t^3\,\mathbf{k}$. Calculate the curvature at the time $t = -2$.

5 (9 points) Find the absolute maximum of the function $f(x, y) = (2x - 1)\cos\left(\frac{\pi}{2}y\right)$ on the closed rectangular region with vertices $(0, 1)$, $(0, 4)$, $(3, 1)$ and $(3, 4)$.