Name_____ Sec_____

MATH 251/253 Quiz 3 Spring 2008

Section 508/200,501,502 P. Yasskin

1	/10	3	/10
2	/ 5	Total	/25

1. (10 points) Find all critical points of the function $f = 2x^2y + 3xy^2 + 6xy$. Then use the 2nd Derivative Test to classify each as a local minimum, local maximum or saddle point or say the test fails.

2. (5 points) If the temperature in a room is given by $T = 75 + xy + xz + yz$. Find the rate of change of the temperature **in the direction of** the vector $(12, 4, 3)$ at the point $(1, 0, 2)$.

3. (10 points) A rectangular box sits on the xy-plane with its upper vertices on the elliptic paraboloid $z = 36 - 9x^2 - 4y^2$. Find the **dimensions** and **volume** of the largest such box.