Name_____ ID_____

1-4	/20
5	/ 5
Total	/25

MATH 251 Quiz 3 Spring 2007

Sections 509 P. Yasskin

Multiple Choice & Work Out: (5 points each)

1. Find the equation of the plane tangent to the surface $ze^{xy-2} = 3$ at the point $(2, 1, 3)$.
Its z-intercept is:

a. 3

b. -3

c. 15

d. -15

e. 0

2. Find the equation of the line perpendicular to the surface $ze^{xy-2} = 3$ at the point $(2, 1, 3)$.
It intersects the xy-plane at:

a. $(7, 17, 0)$

b. $(-7, -17, 0)$

c. $(11, 19, 0)$

d. $(-11, -19, 0)$

e. $(11, 19, 6)$

3. If the temperature in a room is given by $T = 75 + xy^2z$ and a fly is located at $(2,1,3)$, in what **unit** vector direction should the fly fly in order to **decrease** the temperature as fast as possible?

a. $\langle 3,12,2\rangle$

b. $\langle 3,-12,2\rangle$

c. $\langle -3,-12,-2\rangle$

d. $\frac{1}{\sqrt{157}}\langle 3,12,2\rangle$

e. $\frac{1}{\sqrt{157}}\langle -3,-12,-2\rangle$

4. Which of the following is NOT a critical point of $f(x,y) = (2x - x^2)(4y - y^2)$?

a. $(0,0)$

b. $(0,4)$

c. $(1,2)$

d. $(2,0)$

e. $(-2,4)$

5. Find 3 numbers a, b and c whose sum is 80 for which $ab + 2bc + 3ac$ is a maximum.

Solve on the back of the Scantron.