**Math 32A. Quiz 5b February 23, 2006**

**Name:**

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Write your solution on the exam sheet. Show some work and justify your answer. Do not just give the correct answer. You have 15 minutes. Good luck!

**1.** Find all first and second partial derivatives of the function

$$f(x, y) = e^{(x^2)} \cos y.$$

Solutions:

$$f_x = 2xe^{(x^2)} \cos y$$

$$f_y = -\sin y e^{(x^2)},$$

$$f_{xx} = 4x^2 e^{(x^2)} \cos y + 2e^{(x^2)} \cos y,$$

$$f_{yy} = -\cos y e^{(x^2)},$$

$$f_{xy} = (f_x)_y = -2 \sin y x e^{(x^2)},$$

$$f_{yx} = (f_y)_x = -2 \sin y x e^{(x^2)}.$$

There is a theorem that the last two will be equal whenever they are both continuous.