QUIZ 4 – Math 213 – Fall 2007
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1. Find the unit tangent vector to $\vec{r}(t) = \langle e^{-t}, 2\cos(3t), 2\sin(3t)\rangle$ when $t = 0$

2. Find parametric equations of the tangent line to $\vec{r}(t) = \langle 2\sin t, 2\cos t, 5t\rangle$ when $t = 4\pi$

3. $\lim_{(x,y)\to(0,0)} \dfrac{y^2}{x^2+y^2} =$

4. $\lim_{(x,y)\to(0,0)} \dfrac{x^3 - xy^2}{x^2+y^2} =$

5. If $f(x,y) = e^{-x}\sin(x+y)$, then $\dfrac{\partial f}{\partial x} =$

6. If $f(x,y) = e^{xy}\ln y$, then $f_y =$

7. Find the length of $\vec{r}(t) = (\cos^3 t)\vec{j} + (\sin^3 t)\vec{k}$ for $0 \le t \le \pi/2$

8. What are the level-lines of $f(x,y) = \sqrt{9 - x^2 - y^2}$

9. Compute Δf for $f(x,y) = \ln(x^2+y^2)$

10. Compute $\dfrac{\partial^{10} f}{\partial y^3 \partial x^7}$ for $f(x,y) = ye^x + x^3\sin(x) + y^3$