

MATH 261 EXAM 4, Spring 2005

Simplify all answers. Show your work!		Name:	Score	
1.	a) Let $f(x, y) = \sqrt{x^4 + y^4}$. Compute ∇f .	b) Let $f(x, y, z) = x^2 y z^5$. Compute ∇f .	1	
			2	
			3	
			4	
			5	
			6	
2.	Compute $\int_C xy^3 ds$, where C is the curve given by: $x = 3 \cos t$, $y = 3 \sin t$, $z = 4t$, $0 \leq t \leq \pi/2$		7	
			8	
			9	
			10	
			Tot	
3.	a) Find a function f so that $\nabla f = \mathbf{F}$. $\mathbf{F} = (2xe^{4y} + 9x^2)\mathbf{i} + (4x^2e^{4y} - 1)\mathbf{j} + z\mathbf{k}$	b) Find the unit normal to: $z = x^2 - y^2$ at $(1, 1, 0)$.	Ans:_____.	
			Ans:_____.	
4.	Find $\int_C (3y^2 \cos 3x + 2e^{2x}) dx + 2y \sin 3x dy$, along the curve $\mathbf{r}(t) = \langle \cos t, \sin t \rangle$ $0 \leq t \leq \pi/2$.		Ans:_____.	
5.	Find $\int_C \mathbf{F} \cdot d\mathbf{r}$, where $\mathbf{F} = (2y^3 + e^{3x})\mathbf{i} - (2x^3 + e^{3y})\mathbf{j}$, and C is the boundary of the region $x = \sqrt{4 - y^2}$, $x = 0$.		Ans:_____.	
Extra Space				

