

MATH 261 EXAM 4, Fall 2005

Simplify all answers. Show your work!		Name:	Score	
1.	a) Let $f(x, y) = e^{5x} \sin 7y$. Compute ∇f .	b) Let $f(x, y, z) = x^2 z^3 - zy^2$. Compute ∇f .	1	
			2	
			3	
			4	
			5	
			6	
2.	Compute $\int_C xy^2 ds$, where C is the curve given by: $x = \cos t$, $y = \sin t$, $z = t$, $0 \leq t \leq \pi/2$.		7	
			8	
			9	
			10	
			Tot	
3.	a) Find a potential for the vector field \mathbf{F} . $\mathbf{F} = (e^x \ln y)\mathbf{i} + (\frac{e^x}{y} + \sin z)\mathbf{j} + y \cos z\mathbf{k}$	b) Show that the given vector field is conservative. $\mathbf{F} = 2xy^3\mathbf{i} + 3x^2y^2\mathbf{j}$	Ans:_____.	
			Ans:_____.	
4.	Find $\int_C (2xz + \sin y) dx + x \cos y dy + x^2 dz$, along the curve $\mathbf{r}(t) = \langle \cos t, \sin t, t \rangle$, $0 \leq t \leq 2\pi$.		Ans:_____.	
			Ans:_____.	
5.	Find $\int_C \mathbf{F} \cdot d\mathbf{r}$, where: $\mathbf{F} = x^2y \mathbf{i} + \sin 5y \mathbf{j}$ and C is the triangle with vertices at (0,0), (1,0) and (1,3).		Ans:_____.	
			Ans:_____.	
Extra Space				

