

Oct. 22, 2012



EE214000 Electromagnetics, Fall
Quiz #4, Open books, notes (27 points)

1. What is the physical meaning of gradient of a scalar? (3 points)
2. What is the physical meaning of the divergence of a vector? (3 points)
3. How is the direction of the curl of a vector defined? (3 points)
4. Given a vector in space $\vec{A} = A_x \hat{a}_x + A_y \hat{a}_y + A_z \hat{a}_z$, what are $\nabla \cdot \vec{A}$, $\nabla \times \vec{A}$, and $\nabla^2 \vec{A}$ in the Cartesian coordinate system? (6 points)
5. Given a scalar V , what are ∇V and $\nabla^2 V$ in the Cartesian coordinate system? (4 points)
6. What is the Stoke's theorem? (2 points)
7. What is the divergence theorem? (2 points)
8. What are the two null identities of vector calculus mentioned in the class? (4 points)