

Math 335-002

Homework #8

Due date: February 27, 2008

1. Problem 4.4(c), page 73.
2. Use suffix notation to simplify: $[\mathbf{a} \times (\mathbf{a} \times \mathbf{b})] \times \mathbf{b}$
3. Complete the derivation of the product rule for the $\vec{\nabla} \times (\vec{\mathbf{u}} \times \vec{\mathbf{v}})$ using suffix notation, which we started in class (Equation 4.30)
4. Use suffix notation to derive the product rule for $\vec{\nabla} \cdot (\vec{\mathbf{u}} \times \vec{\mathbf{v}})$ (Equation 4.29)
5. Problems 4.10(b), 4.13, 4.15, 4.16, 4.17, page 82.
6. Use suffix notation to simplify (here $r = |\vec{\mathbf{r}}|$):
 - a) $\vec{\nabla} \cdot (\vec{\mathbf{r}} \times \vec{\mathbf{u}})$
 - b) $\vec{\nabla} \cdot (r^2 \vec{\mathbf{r}})$
 - c) $\vec{\nabla} \times (r^2 \vec{\mathbf{r}})$