

## Assignment 12

Coverage: 16.8 in Text.

Exercises: 16.8 no 17, 19, 20, 21, 25, 28, 29, 30.

No need to hand in any exercise.

### Supplementary Problems

1. Verify that for any  $k$ -form  $\omega$ ,  $d(d\omega) = 0$ . You may work on the 3-dimensional space.
2. Verify (a)  $\nabla \times \nabla\Phi = \mathbf{0}$ , and (b)  $\nabla \cdot \nabla \times \mathbf{A} = 0$  for any function  $\Phi$  and vector field  $\mathbf{A}$ .