

**Math 335-002**  
**Homework #4**  
Due date: February 6

Please show all work in detail to receive full credit. Late homework is not accepted.

1. Problems 3.1 and 3.2 on p. 53
2. Problem 1.17 on p. 20.
3. Problems 3.11, 3.12, 3.13 and 3.14 on p. 64
4. Consider the vector field  $\mathbf{u} = (y^2, x^2, 0)$ 
  - a) Sketch this field in the  $x$ - $y$  plane.
  - b) Find its divergence and its curl.
  - c) Find the set of points in space at which the value of the curl equals zero, and explain this answer in terms of your sketch.