Name: _____

Circle your TA ***and*** the time of your ***recitation***:   **DH   CM   8   9   10   11**

Task Master: _____   **Cynic:** _____   **Recorder:** _____

MTH 254   **CURVILINEAR COORDINATES**   Fall 2010

Working in small groups (3 or 4 people), solve as many of the problems below as possible. Try to resolve questions within the group before asking for help. Each group member should then write up the solutions in their own words; Show your work! Full credit will only be given if your answer is supported by calculations and/or explanations as appropriate.

1.   Determine the lengths of each path in the figures below.

2.   Determine the area element dA in polar coordinates.

3.   Determine the volume element dV in both cylindrical and spherical coordinates.

Cylindrical Coordinates

Spherical Coordinates