MAT 397	CAL III	Section M005	Spring 2016
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Your Name (please PRINT): _	
Student ID Number:	

1. Determine whether the vector field  $\mathbf{F}(x,y) = e^y \mathbf{i} + (xe^y + \cos y)\mathbf{j}$  is conservative. If yes, find a potential function for  $\mathbf{F}$ .

2. Find the work done by the force field  $\mathbf{F}(x,y)$  defined as in the previous problem in moving an object from point P(0,0) to Q(1,0)

3. Find the arc length of the curve given by  $\mathbf{r}(t) = \langle \frac{t^2}{2}, \frac{t^3}{3} \rangle$ , where t is from 0 to 1.