

## Quiz 9

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.