Calculus III   Section 15.1 Homework

1) Determine whether the vector field is conservative.

If it is, find a potential function for the vector field.

$$\mathbf{F}(x, y) = 2xy\mathbf{i} + x^2\mathbf{j}$$

2) Determine whether the vector field is conservative.

If it is, find a potential function for the vector field.

$$\mathbf{F}(x, y) = 2y^3\mathbf{i} + 6xy^2\mathbf{j}$$

3) Determine whether the vector field is conservative.

If it is, find a potential function for the vector field.

$$\mathbf{F}(x, y) = 3xe^x\mathbf{i} + 3ye^y\mathbf{j}$$

4) Determine whether the vector field is conservative.

If it is, find a potential function for the vector field.

$$\mathbf{F}(x, y) = e^x \sin x\mathbf{i} + e^y \cos y\mathbf{j}$$