

Section 16.5: Additional Problems

1. Determine if the vector field is conservative.

(a) $\mathbf{F} = \langle 4yz, 1 - 6yz^3, 4x^2 - 9y^2z^2 \rangle$

(b) $\mathbf{F} = \langle 8xz, 1 - 6yz^3, 4x^2 - 9y^2z^2 \rangle$

2. If $\mathbf{F} = \langle 8xz, 1 - 6yz^3, 4x^2 - 9y^2z^2 \rangle$, compute $\nabla \cdot F$

3. For the vector field $\mathbf{F} = \langle y^2z^3, 2xyz^3, 3xy^2z^2 \rangle$. Determine if the vector field is conservative. If it is conservative, then compute the following line integral.

Compute $\int_{(1,1,1)}^{(2,2,1)} \mathbf{F} \cdot d\mathbf{r}$