

9.9.14 part d

show $\text{curl}(\text{grad}(f)) = 0$

$$\text{curl}(\text{grad}(f)) = \text{curl}([\partial_x f \quad \partial_y f \quad \partial_z f])$$

$$= \begin{bmatrix} \partial_y \partial_z f - \partial_z \partial_y f \\ \partial_z \partial_x f - \partial_x \partial_z f \\ \partial_x \partial_y f - \partial_y \partial_x f \end{bmatrix}$$

$$= \vec{0}$$