

7.

$$\text{curl}(\underline{F}) = \nabla \times \underline{F}$$

$$= \begin{vmatrix} \underline{i} & \underline{j} & \underline{k} \\ \frac{\partial}{\partial x} & \frac{\partial}{\partial y} & \frac{\partial}{\partial z} \\ xz - y^2 & 2yz & 3z \end{vmatrix}$$

$$= \underline{i}(0 - 2y) - \underline{j}(0 - x) + \underline{k}(0 + 2y)$$

$$= \langle -2y, x, 2y \rangle$$

$$\text{div}(\underline{F}) = \nabla \cdot \underline{F}$$

$$= \frac{\partial}{\partial x}(xz - y^2) + \frac{\partial}{\partial y}(2yz) + \frac{\partial}{\partial z}(3z)$$

$$= z + 2z + 3$$

$$= 3z + 3$$