

$$\vec{F}(x, y) = \langle M, N \rangle$$

$$\vec{F}(x, y) = M(x, y)\hat{i} + N(x, y)\hat{j}$$

$$\text{curl } \vec{F} = N_x - M_y$$

$$\text{div } \vec{F} = M_x + N_y$$