let $F = (x^2 - y^2 + x)\hat{i} - \hat{j}(2xy + y)$

$$\nabla \times F = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ \frac{\partial}{\partial x} & \frac{\partial}{\partial y} & \frac{\partial}{\partial z} \\ x^2 - y^2 + x & -2xy - y & 0 \end{vmatrix} = \hat{i}(0) - \hat{j}(0) + \hat{k}(-2y + 2y)$$

$$= 0$$

$\Rightarrow$ F is irrotational

let $\phi$ be scalar potential

then $\frac{d\phi}{dx} = x^2 - y^2 + x$ & $\frac{\partial \phi}{\partial y} = -2xy - y$

$\phi = \frac{x^3}{3} - y^2 x + \frac{x^2}{2}$ & $\phi = -xy^2 - \frac{y^2}{2}$

Thus $\boxed{\phi = \frac{x^3}{3} - y^2 x + \frac{x^2}{2} - xy^2 - \frac{y^2}{2}}$