Q1) Find work done by the force $F(x, y) = xe^y \mathbf{i} + (x - y) \mathbf{j}$ acting counter-clockwise once around the triangle with vertices (2,2), (4,2) and (4,4).

Q2) Show that the integral is independent of path $\oint_C (2x - y \sin xy - 5y^4)dx - (20xy^3 + x \sin xy)dy$

Find the potential function $\phi(x, y)$. 