Q1. Use Green’s theorem to evaluate the line integral \( \int_C xy\,dx + x^2 y^3\,dy \) along the path given below:

\[ y = x^2 \quad \text{and} \quad y = x \]
Q1. Use independence of path and potential theory to evaluate the integral 
\[ \int_{(1,1)}^{(2,2)} y^2 \sin x \, dx - 2y \cos x \, dy \]