1. Use Green's Theorem to evaluate the line integral along the given positively oriented curve.

$$\int_C \frac{1}{4}y^4x \, dx + \frac{5}{2}y^3x^2 \, dy,$$

   where C is the circle $x^2 + y^2 = 4$.

2. *True / False?* Fix two points A and B in a simply connected domain D. If $\int_C \mathbf{F} \cdot d\mathbf{r}$ is the same for all paths C from A to B, then $\mathbf{F}$ must be conservative on D.

3. *True / False?* Suppose P and Q has continuous partial derivatives everywhere. Green's Theorem cannot help us in computing line integral $\int_C \mathbf{F} \cdot d\mathbf{r}$ where C is given below.