1. Evaluate $\oint \vec{\boldsymbol{F}} \cdot d\vec{\boldsymbol{r}}$ *explicitly as a line integral*, where $\vec{\boldsymbol{F}} = r^3\,\hat{\boldsymbol{\phi}}$ and C is the circle of radius 3 in the xy-plane, oriented in the usual, counterclockwise direction (as seen from above).

2. **Stokes' Theorem**

   - List at least 3 different surfaces which you could use with Stokes' Theorem to evaluate the line integral in the previous problem.
   - Evaluate the surface integral for any one of the surfaces on your list.
   - If time permits, evaluate the surface integral for other surfaces on your list.