This assignment is in two parts. The first part is due at the start of class on Day 19. It will not be collected, but you are expected to complete these exercises, just to practice basic skills. If you feel that you need more practice, then do more problems or talk to me.

16.2 Exercises 5, 7, 33, 39, 41, 45

The second part is due on paper at the start of class on Day 22. Submit polished solutions, including all necessary work and no unnecessary work, in the order assigned.

A. 16.2 Exercise 48.

B. Let $X$ be the set of points in the plane other than the origin:

$$X = \{(x, y) : x \neq 0 \text{ or } y \neq 0\}.$$

Let $\vec{F} = \langle -y/(x^2 + y^2), x/(x^2 + y^2) \rangle$. Recall that $\vec{F}$ is defined on all of $X$ and $\frac{d}{dy}F_1 = \frac{d}{dx}F_2$ everywhere on $X$, but $\vec{F}$ is not conservative on $X$. Let $C$ be the circle of radius $R$ centered at the origin, oriented counterclockwise.

Compute the line integral of $\vec{F}$ along $C$. How can you conclude, from the integral, that $\vec{F}$ is not conservative?