Complete these exercises:

Section 16.2 Exercises 4, 14, 18, 22, 32a, 42

The line integral problem below. [It is much easier than the related problem from the previous homework.]

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 from earlier homework 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, just from this integral, that $\vec{F}$ is not conservative?