

These five problems from Section 16.2 are not part of your homework. I mention them, only because I have assigned them in the past, and they're good practice. I'm not assigning them this term, because I think that you have enough other work to do. :)

Section 16.2 #20, 21, 23, 41, 45.

Now your homework starts. First, please do the following eight textbook problems.

Section 16.2 # 44, 51.

Section 16.3 #12, 15, 16, 25, 28, 31.

Second, do this short problem:

A. Repeat Section 16.3 #28, but with "1.4" changed to "1.2".

Finally, here is a problem that continues an example introduced in our previous homework. Let D be the set of points in the plane other than the origin:

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

Let

$$\vec{F} = \langle P(x, y), Q(x, y) \rangle = \left\langle \frac{-y}{x^2 + y^2}, \frac{x}{x^2 + y^2} \right\rangle.$$

In our previous homework, we learned that \vec{F} is defined on all of D , and $\frac{\partial}{\partial y}P = \frac{\partial}{\partial x}Q$ everywhere on D , but \vec{F} is not conservative on D .

B. Let C be the circle of radius 1 centered at the origin, parametrized counter-clockwise. Compute the line integral of \vec{F} along C . Can you conclude, from this calculation, that \vec{F} is not conservative?