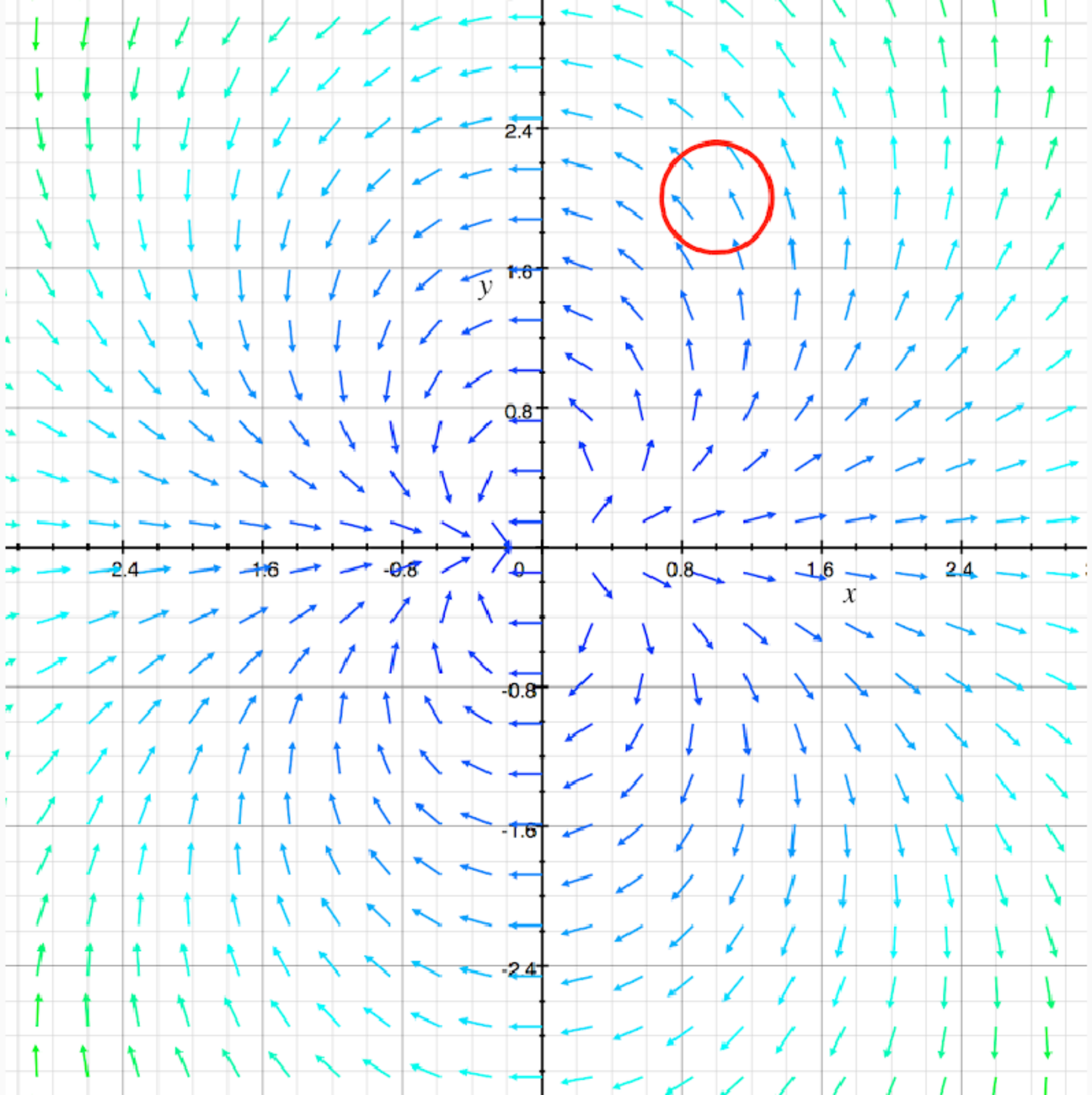
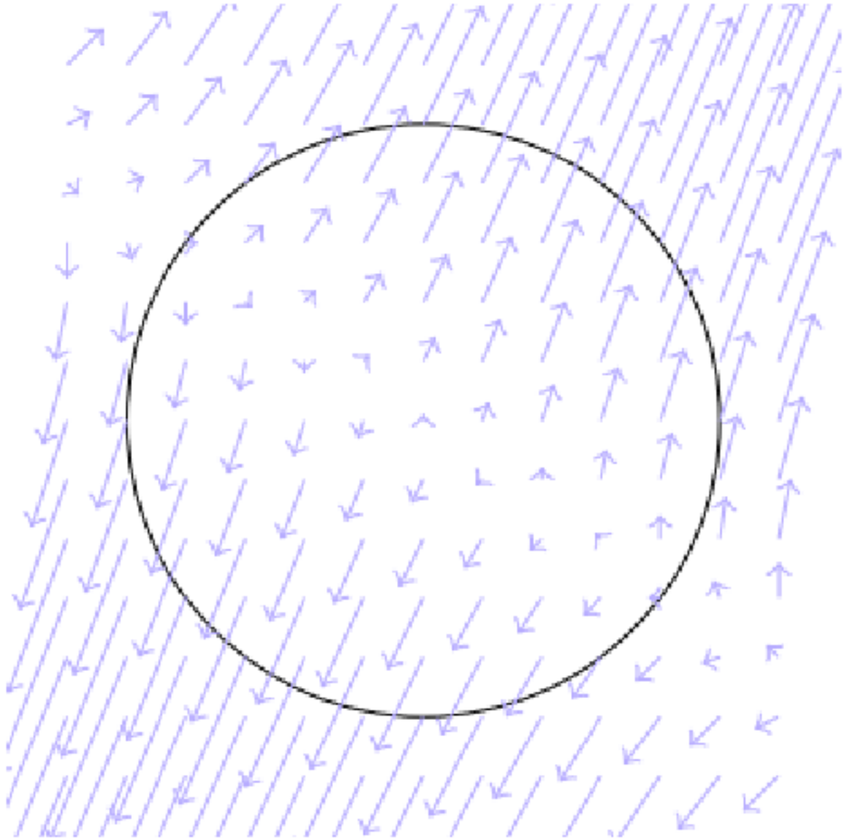


2D Div Theorem: Problems!

We will calculate the flow of the field

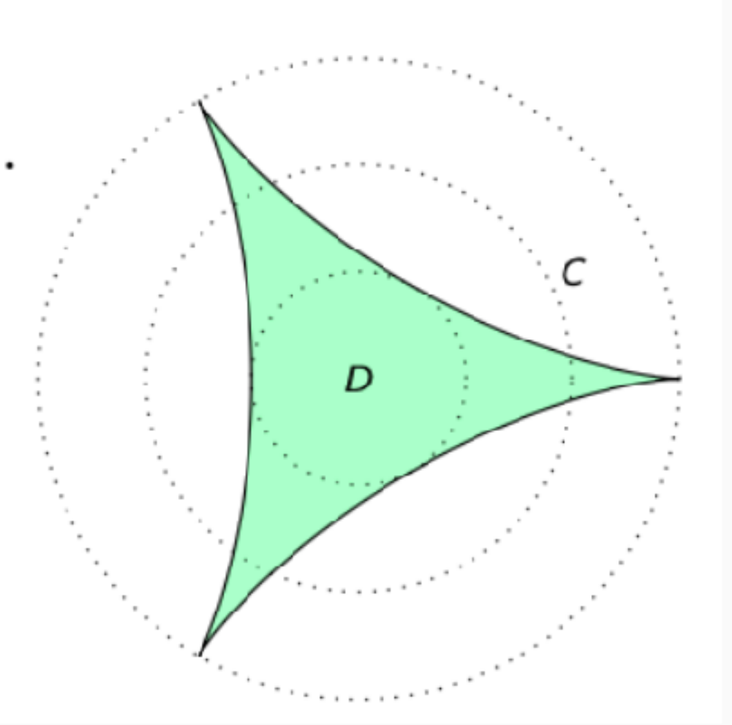
$$\mathbf{F} = (x + 2y, 3x + 4y)$$

out of the unit circle C.



The picture shows the deltoid curve C:

$$x = 2\cos(t)+\cos(2t) \qquad y = 2\sin(t)-\sin(2t).$$



Example

Find the flux of $\mathbf{F}(x, y) = \langle 2x + 2xy + y^2, x + y - y^2 \rangle$ across the circle $x^2 + y^2 = 4$.