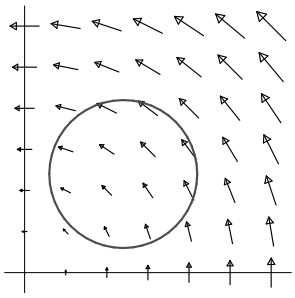
MTH 255H **HW #4** Winter 2014

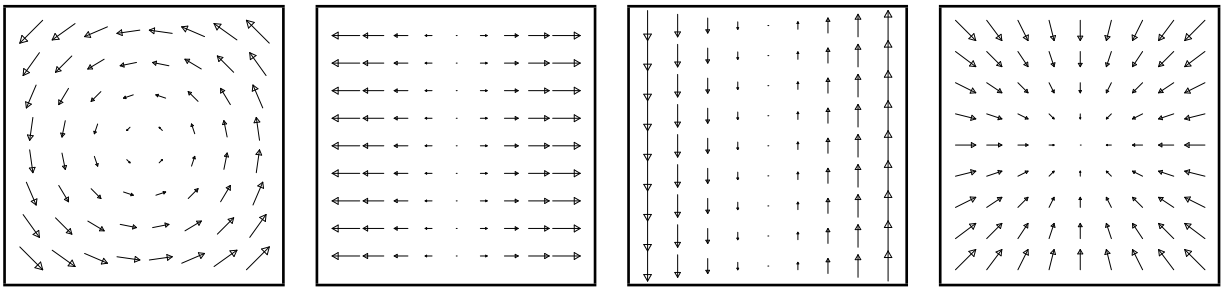
1. Consider the vector field $\vec{\boldsymbol{F}}$ shown at the right, and the loop C, which is to be traversed in the *counterclockwise* direction. Is $\oint_C \vec{\boldsymbol{F}} \cdot d\vec{\boldsymbol{r}}$ positive, negative, or zero?



2.

(a) For each vector field $\vec{\boldsymbol{F}}$ shown below, sketch a curve for which the integral $\int_C \vec{\boldsymbol{F}} \cdot d\vec{\boldsymbol{r}}$ is positive.

(b) For which of these vector fields is it possible to choose your curve to be closed?



EXTRA CREDIT:

From your answer to Problem 1, can you determine whether or not $\vec{\boldsymbol{F}} = \vec{\nabla} f$ for some function f?