Assignment #6

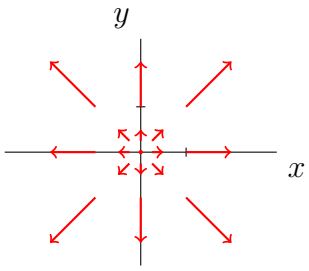
Due on Friday, February 13, 2015

Read Chapter 4, on *Vector Fields,* in the class lecture notes at
`http://pages.pomona.edu/~ajr04747/`

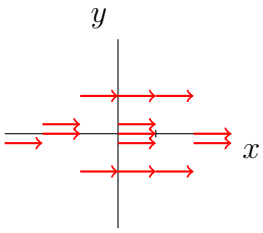
Read Section 17.3, on *Vector Fields,* in Calculus: Multivariable, by McCallum, Hughes–Hallett, Gleason, et al.

Do the following problems

1. Give a formula defining the vector field $\overrightarrow{F}(x,y) = f(x,y)\,\overrightarrow{i} + g(x,y)\widehat{j}$, where f and g are real valued functions defined on the plane, whose picture is shown below.



2. Give a formula defining the vector field $\overrightarrow{F}(x,y) = f(x,y)\,\overrightarrow{i} + g(x,y)\widehat{j}$, where f and g are real valued functions defined on the plane, whose picture is shown below.



3. Sketch the vector field $\overrightarrow{F}(x,y) = 2\,\overrightarrow{i} + 3\widehat{j}$,

4. Sketch the vector field $\overrightarrow{F}(x,y) = y\widehat{j}$,

5. Sketch the vector field $\overrightarrow{F}(\overrightarrow{r}) = \dfrac{1}{\|\overrightarrow{r}\|}\,\overrightarrow{r}$, where $\overrightarrow{r} = x\,\overrightarrow{i} + y\widehat{j} \neq (0,0)$.