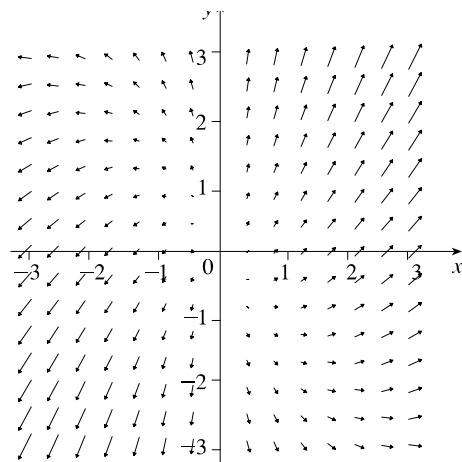


Math 213 Calculus III

Reading the Text

Read Section 13.1, 13.2 and 13.5 and answer the following questions

- Let $f(x, y)$ be a function of two variables with level curves in the plane corresponding to $f(x, y) = k$. How is the gradient vector field, ∇f related to these level curves? How does the length of ∇f vary with the spacing of the curves?
- Which of the vector fields $[x, x - y]$, $[y, x - y]$, $[x, x + y]$, $[y, x + y]$ describes the plot below?



- What do we know about $\text{div}(\text{curl } \mathbf{F})$?
- If $\mathbf{F}(x, y, z) = [xz, x^2z, x^3z]$ compute $\text{div } \mathbf{F}$.