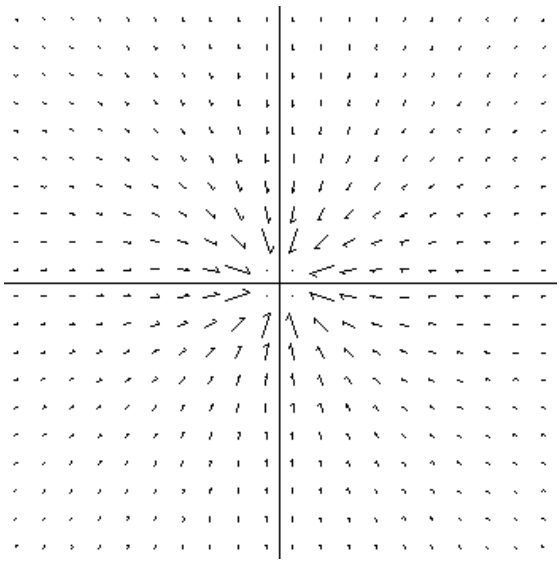
Homework: Separating forces Name _____

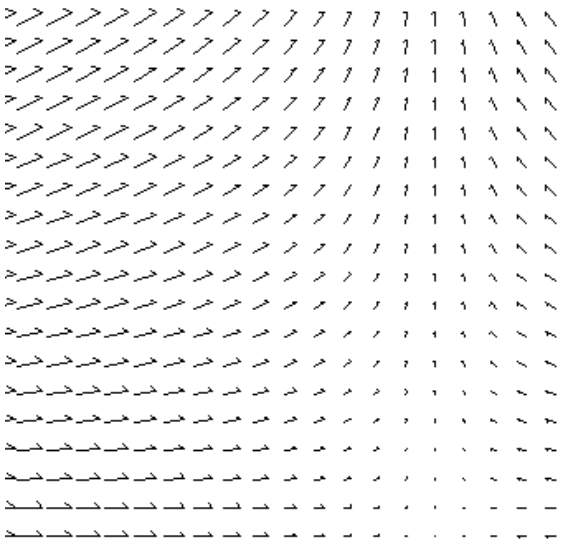
1. *Field plots*

   a. Is this force separable in Cartesian coordinates? Explain your reasoning, and circle at least two places that help you decide.



   b. Is it conservative? Explain your reasoning

   c. Is this force separable in Cartesian coordinates? Explain your reasoning, and circle at least two places that help you decide.



   d. Is it conservative? Explain your reasoning.

2. *Equations*

Are these forces separable in Cartesian coordinates? Show your work in detail.

a) $\vec{F} = \beta z\hat{i} + \sin(ky)\hat{j} + \beta x\hat{k}$

b) $\vec{F} = \left(\frac{-\alpha x}{\sqrt{x^2 + y^2}}\right)\hat{i} + \left(\frac{-\alpha y}{\sqrt{x^2 + y^2}}\right)\hat{j}$

c) $\vec{F} = e^{i\alpha(x+y)}\hat{i} + e^{i\beta(y+x)}\hat{j} + e^{\gamma z}\hat{k}$

