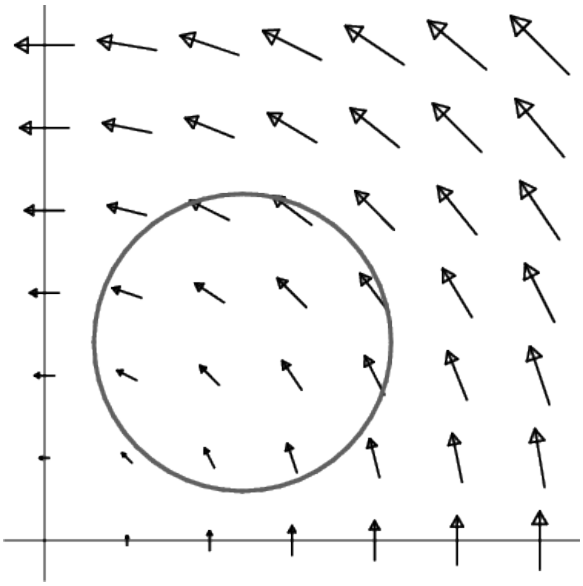

1 Vector Field Fit

Consider the vector field $\vec{\boldsymbol{F}}$ shown. Which of the following formulas best fits $\vec{\boldsymbol{F}}$? Why?

(a) $\vec{\boldsymbol{F}}_1 = \dfrac{x}{x^2+y^2}\,\hat{\boldsymbol{x}} + \dfrac{y}{x^2+y^2}\,\hat{\boldsymbol{y}}$

(b) $\vec{\boldsymbol{F}}_2 = -y\,\hat{\boldsymbol{x}} + x\,\hat{\boldsymbol{y}}$

(c) $\vec{\boldsymbol{F}}_3 = \dfrac{-y}{(x^2+y^2)^2}\,\hat{\boldsymbol{x}} + \dfrac{x}{(x^2+y^2)^2}\,\hat{\boldsymbol{y}}$