MAT273 **Vector Fields**
16.1

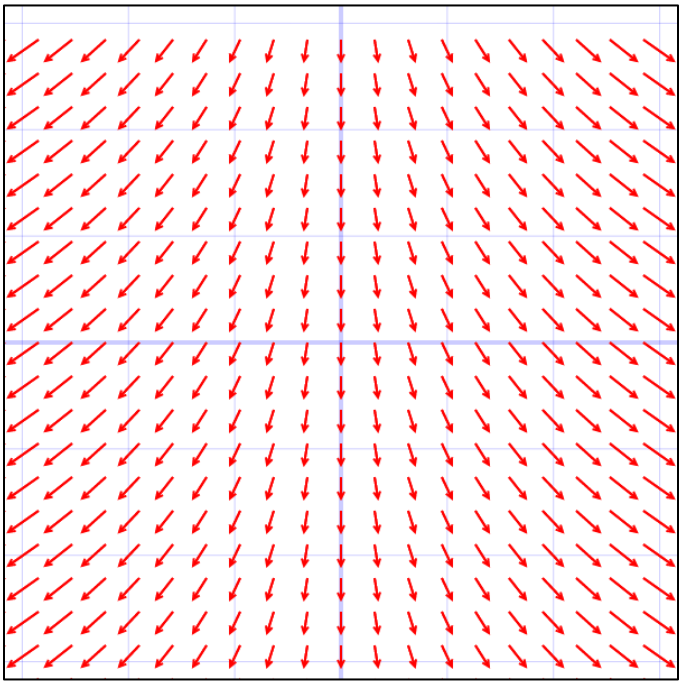
1. Sketch the vector field for $\vec{F} = \langle x, -2 \rangle$ near the origin.

2. Sketch the vector field for $\vec{F} = \langle -x, -y \rangle$ near the origin.

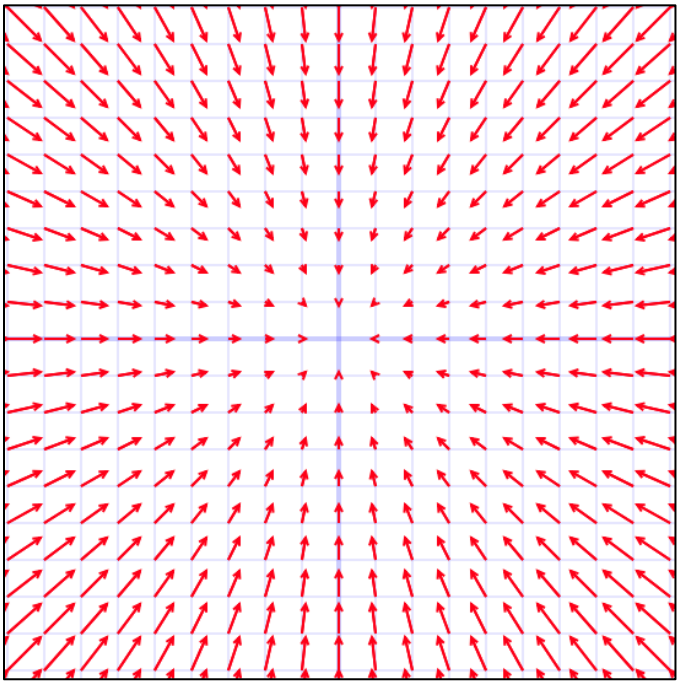
3. Suppose $T(x, y, z)$ represents the temperature (in °F) of the air in the room. How could we interpret what gradient vector ∇T would represent? What about $-\nabla T$?

Answers:

1.



2.



3. The gradient vector ∇T would represent the direction of greatest rate of change of temperature in the room. In other words, the vectors of ∇T would point in the direction of warmer air in the room. The vector $-\nabla T$ would point in the direction of the flow of heat, since heat flows or diffuses from higher towards lower temperatures.