

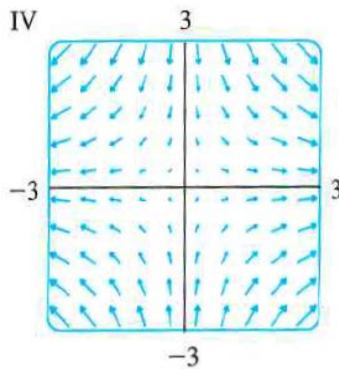
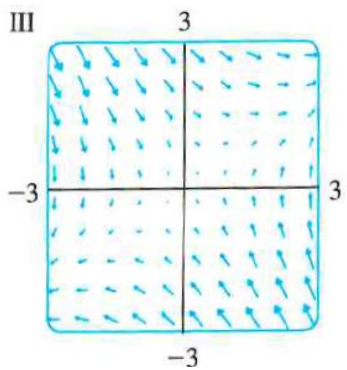
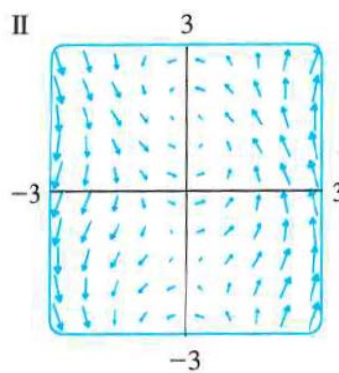
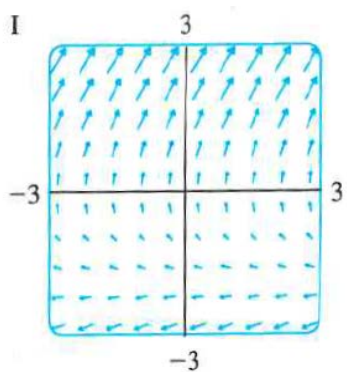
MA 213 Worksheet #23

Section 16.1

11/20/18

1 16.1.11-14 Match the vector fields, \mathbf{F} , with the plots below. Give reasons for your choices.

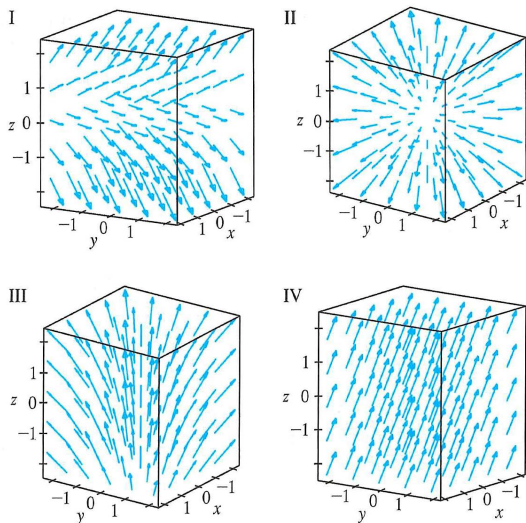
- (a) $\mathbf{F}(x, y) = \langle x, -y \rangle$
- (b) $\mathbf{F}(x, y) = \langle y, x - y \rangle$
- (c) $\mathbf{F}(x, y) = \langle y, y + 2 \rangle$
- (d) $\mathbf{F}(x, y) = \langle \cos(x + y), x \rangle$



2 16.1.25 Let $f(x, y) = \frac{1}{2}(x - y)^2$. Find the gradient vector field, ∇f , of f and sketch it.

3 16.1.15-18 Match the vector fields, \mathbf{F} , with the plots below. Give reasons for your choices.

- (a) $\mathbf{F}(x, y, z) = \mathbf{i} + 2\mathbf{j} + 3\mathbf{k}$
- (b) $\mathbf{F}(x, y, z) = \mathbf{i} + 2\mathbf{j} + z\mathbf{k}$
- (c) $\mathbf{F}(x, y, z) = x\mathbf{i} + y\mathbf{j} + 3\mathbf{k}$
- (d) $\mathbf{F}(x, y, z) = x\mathbf{i} + y\mathbf{j} + z\mathbf{k}$



4 16.1.29-32 Match the functions, f , with the plots of their gradient vector fields below. Give reasons for your choices.

- (a) $f(x, y) = x^2 + y^2$
- (b) $f(x, y) = x(x + y)$
- (c) $f(x, y) = (x + y)^2$
- (d) $f(x, y) = \sin \sqrt{x^2 + y^2}$

