

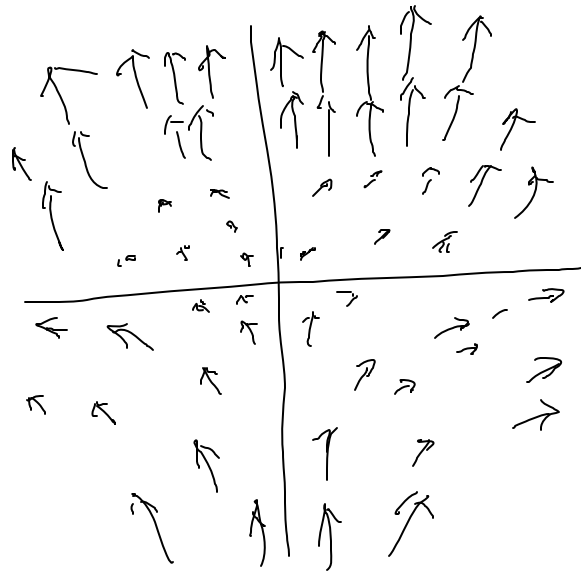
"QUIZ" for Lecture 17

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E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q17FirstLast.pdf) ASAP BUT NO LATER THAN Nov. 5, 8:00pm

1. Sketch the vector planar vector field

$$\mathbf{F} = \langle x, y^2 \rangle$$



2. Find a potential function for the vector field \mathbf{F}

$$\frac{\partial f}{\partial x} = y \cos(xy)$$

$$\mathbf{F} = \langle y \cos(xy), x \cos(xy) \rangle$$

$$\frac{\partial F_2}{\partial x} = \cos(xy) - xy \sin(xy) \quad \frac{\partial f}{\partial y} = x \cos(xy)$$

$$\frac{\partial F_1}{\partial y} = \cos(xy) - xy \sin(xy) \quad f(x, y) = \sin(xy) + g(y)$$

$$\frac{\partial f}{\partial y} = \cos(xy) + \frac{\partial g(y)}{\partial y}$$

$$\frac{\partial F_2}{\partial x} - \frac{\partial f}{\partial y} = 0 \quad \frac{\partial g(y)}{\partial y} = -xy \sin(xy) \quad g(x) = x \cos(xy)$$

Conservative

potential function

$$\sin(xy) (1+x)$$