BROWN UNIVERSITY
PROBLEM SET 10
INSTRUCTOR: SAMUEL S. WATSON
DUE: 1 DECEMBER 2017

Name:

Print out these pages, including the additional space at the end, and complete the problems by hand. Then use Gradescope to scan and upload the entire packet by 18:00 on the due date.

Problem 1

Sketch the vector fields $\mathbf{F}_1(x,y) = \dfrac{y\,\mathbf{i} - x\,\mathbf{j}}{\sqrt{x^2+y^2}}$ and $\mathbf{F}_2(x,y) = \dfrac{y\,\mathbf{i} - x\,\mathbf{j}}{x^2+y^2}$.

Solution

Problem 2

Find $\int_C (x+2y)\,dx + x^2\,dy$ where C is the concatenation of the line segment from $(0,0)$ to $(2,1)$ and the line segment from $(2,1)$ to $(3,0)$. (Note: the notation $(x+2y)\,dx + x^2\,dy$ is another way of writing $\mathbf{F}\cdot d\mathbf{r}$, where $\mathbf{F} = \langle x+2y, x^2\rangle$.)

Solution

Final answer: