Instructions: Show all work. Use exact answers unless otherwise asked to round.

1. Sketch the graph of the vector-valued function $\vec{r}(t) = \cos t \,\hat{\imath} - t \hat{\jmath} + 2 \sin t \,\hat{k}$. Use 10 points, and at least 2 full cycles.

- 2. Using the function in #1, find the following:
 - a. $\vec{r}'(t)$
 - b. $\int r(t)dt$
- 3. Sketch the vector field $\vec{F}(x,y) = y\hat{\imath} + (x+y)\hat{\jmath}$. Sketch at least 15 points by hand. Verify your graph with technology and include that graph with your solution.