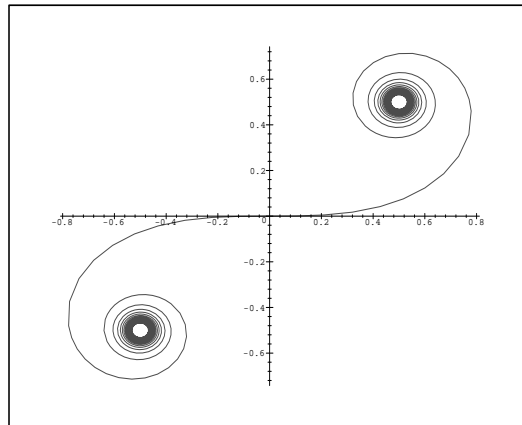


Problem 20, Section 10.3. A curve called **Cornu's spiral** is defined by the parametric equations

$$x = C(t) = \int_0^t \cos\left(\frac{\pi}{2}u^2\right) du$$

$$y = S(t) = \int_0^t \sin\left(\frac{\pi}{2}u^2\right) du$$

1. An approximate graph of this curve is given.
 - (a) Label the point corresponding to $t = 0$.
 - (b) Use the graph of $y = S(t)$ on page 394 of your text to determine the orientation of Cornu's spiral, and indicate that orientation on the graph below.
 - (c) From the graph, what appears to happen as $t \rightarrow \infty$ and as $t \rightarrow -\infty$?



2. Find the length of Cornu's spiral from the origin to the point with parameter value $t = a$.