

Quiz 7

Name: _____

1.

$$x = \sin t - t \cos t, \quad y = \cos t + t \sin t; \quad \frac{\pi}{4} \leq t \leq \frac{\pi}{2}$$

is the parametric representation of a plane curve.

(a) Find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ without eliminating the parameter.

(b) Find the length of the curve.

2. A wind with velocity 45 miles per hour is blowing in the direction of 20°NW . An airplane that flies at 425 miles per hour in still air is supposed to fly straight north. Which direction should the airplane be headed, and how fast will it then be flying with respect to the ground?