

1992-BC3

3. At time  $t$ ,  $0 \leq t \leq 2\pi$ , the position of a particle moving along a path in the  $xy$ -plane is given by the parametric equations  $x = e^t \sin t$  and  $y = e^t \cos t$ .

(a) Find the slope of the path of the particle at time  $t = \frac{\pi}{2}$ .

(b) Find the speed of the particle when  $t = 1$ .

(c) Find the distance traveled by the particle along the path from  $t = 0$  to  $t = 1$ .

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