

Workbook



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Parametric Equations

Curve Length

Questions

- 1) Find the distance traveled between $t = 0$ and $t = \frac{\pi}{2}$ by a particle $P(x, y)$, whose position at time t is given by: $x = \cos t + t \sin t$, $y = \sin t - t \cos t$.
- 2) Find the distance traveled between $t = 0$ and $t = 4$ by a particle $P(x, y)$, whose position at time t is given by: $x = \frac{t^2}{2}$, $y = \frac{1}{3}(2t+1)^{3/2}$.
- 3) Find the distance traveled between $t = 0$ and $t = 4$ by a particle $P(x, y)$, whose position at time t is given by: $x = \frac{1}{3}(2t+3)^{3/2}$, $y = \frac{t^2}{2} + t$.

Answer Key

- 1) $\frac{\pi^2}{8}$
- 2) 12
- 3) 16