

Solutions

Each answer shows the steps, then the **result**.

2.1

- $L = \int_a^b \sqrt{(dx/dt)^2 + (dy/dt)^2} dt$

2.2

- $(2t)^2 + (3t^2)^2 = 4t^2 + 9t^4$

2.3

- $\sqrt{9+16} = 5$; $L = \int_0^2 5 dt = 10$

3.1 B

- the parametric integrand is $\sqrt{(dx/dt)^2 + (dy/dt)^2}$

3.2

(a)

- $(-\sin t)^2 + (\cos t)^2 = \sin^2 t + \cos^2 t = 1$

(b)

- $\int_0^\pi 1 dt = \pi$

3.3

- $\frac{dx}{dt} = 1 - \cos t$, $\frac{dy}{dt} = \sin t$; $L = \int_0^{2\pi} \sqrt{(1 - \cos t)^2 + \sin^2 t} dt$