Solutions

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

2.1

- $\frac{dx}{dt} = 2t,\ \frac{dy}{dt} = 3t^2$

2.2

- $\frac{dy}{dx} = \frac{\cos t}{-\sin t} = -\cot t$

2.3

- $\frac{dy}{dx} = \frac{4}{2t} = \frac{2}{t}$; at $t = 1$ slope $= 2$

3.1 B

- $\frac{dy}{dx} = \frac{dy/dt}{dx/dt}$

3.2

(a)

- $\frac{dy}{dx} = \frac{3t^2 - 3}{2t}$

(b)

- horizontal where $3t^2 - 3 = 0 \Rightarrow t = \pm 1$

3.3

- $\frac{dx}{dt} = e^t,\ \frac{dy}{dt} = 2e^{2t};\ \frac{dy}{dx} = \frac{2e^{2t}}{e^t} = 2e^t$; at $t = 0$, slope $= 2$