

Solutions

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

2.1

- $\vec{v}(t) = \langle 3t^2, 2t \rangle$

2.2

- $\vec{v}(2) = \langle 4, 3 \rangle$; speed $= \sqrt{16 + 9} = 5$

2.3

- $\vec{v} = \langle -\sin t, \cos t \rangle$; $\vec{a} = \langle -\cos t, -\sin t \rangle$

3.1 B

- speed is the magnitude $\sqrt{x'^2 + y'^2}$

3.2

(a)

- $\vec{v} = \langle 2t, 2 \rangle$, $\vec{a} = \langle 2, 0 \rangle$

(b)

- $\vec{v}(1) = \langle 2, 2 \rangle$; speed $= \sqrt{4 + 4} = 2\sqrt{2}$

3.3

- $\vec{v} = \langle e^t, -e^{-t} \rangle$; at $t = 0$, $\vec{v} = \langle 1, -1 \rangle$; speed $= \sqrt{1 + 1} = \sqrt{2}$