

$$\begin{aligned} \mathbf{r}(t) &= \langle 8 \cos t, 7t, 8 \sin t \rangle \quad \Rightarrow \quad \mathbf{v}(t) = \mathbf{r}'(t) = \langle -8 \sin t, 7, 8 \cos t \rangle, \\ \mathbf{a}(t) = \mathbf{v}'(t) &= \langle -8 \cos t, 0, -8 \sin t \rangle, \quad |\mathbf{v}(t)| = \sqrt{64 \sin^2 t + 49 + 64 \cos^2 t} = \\ &= \sqrt{113}. \end{aligned}$$