7. $\vec{r}(t) = 3\vec{i} + 4\cos t\,\vec{j} + 4\sin t\,\vec{k} \qquad t = \pi$

$\vec{r}\,'(t) = -4\sin t\,\vec{j} + 4\cos t\,\vec{k}$

$\vec{r}\,''(t) = -4\cos t\,\vec{j} - 4\sin t\,\vec{k}$

$\vec{r}\,'(\pi) = -4\sin\pi\,\vec{j} + 4\cos\pi\,\vec{k} = -4\vec{k}$ ←

$\vec{r}\,''(\pi) = -4\cos\pi\,\vec{j} - 4\sin\pi\,\vec{k} = 4\vec{j}$

$$\vec{r}\,'(\pi) \times \vec{r}\,''(\pi) = \begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ 0 & 0 & -4 \\ 0 & 4 & 0 \end{vmatrix} = \vec{i}\begin{vmatrix} 0 & -4 \\ 4 & 0 \end{vmatrix} = 16\vec{i}$$

$$\|\vec{r}\,'(\pi) \times \vec{r}\,''(\pi)\| = \|16\vec{i}\| = \sqrt{16^2} = 16$$

$$\|\vec{r}\,'(\pi)\| = \sqrt{(-4)^2} = \sqrt{16} = 4$$

$$k = \frac{\|\vec{r}\,'(\pi) \times \vec{r}\,''(\pi)\|}{\|\vec{r}\,'(\pi)\|^3} = \frac{16}{4^3} = \frac{16}{4\cdot 4\cdot 4} = \boxed{\frac{1}{4}}$$