

$\gamma$  unit speed

Yes

No

Compute Frenet  
frame  $\{\dot{\gamma}, \mathbf{n}, \mathbf{b}\}$

$\Downarrow$

$$\kappa = \|\ddot{\gamma}\|$$

$$\tau = -\dot{\mathbf{b}} \cdot \mathbf{n}$$

Yes

Can you compute  
unit speed  
reparametrization?

No

Use formulas

$$\kappa = \frac{\|\dot{\gamma} \times \ddot{\gamma}\|}{\|\dot{\gamma}\|^2}$$

$$\tau = \frac{(\dot{\gamma} \times \ddot{\gamma}) \cdot \ddot{\gamma}}{\|\dot{\gamma} \times \ddot{\gamma}\|^2}$$

**Warning**

$\kappa, \tau$  only defined  
for regular  $\gamma$