

Due: June 22nd

1. Let $f : (a, b) \rightarrow \mathbb{R}^3$ be a regular, twice differentiable curve. Show that

$$\kappa = \frac{\|f' \times f''\|}{\|f'\|^3}.$$

HINT: Let g be a unit-speed reparameterization of f and write f' and f'' in terms of $g' = T$, $g'' = \kappa N$, the speed function $t \mapsto \|f'\|$ and its derivatives.