Exercise sheet 4

Curves and Surfaces, MTH201

1. Show that the curvature at any point of a line segment is always 0.
2. Find a parametrization of an ellipse, i.e. $\{(x, y) \in \mathbb{R}^2 \mid \frac{x^2}{a} + \frac{y^2}{b} = 1\}$ and use it compute its curvature function $\kappa(t)$.
3. Given *any* smooth parametrization, $\gamma : (\alpha, \beta) \to \mathbb{R}^2$, is the curvature function $\kappa(t)$ always smooth? Do you need to add some condition? What is it?

to be updated...