§12.5 Tangents and Normals to Curves

- 1. Defn: The tangent vector is $\overline{T}(t) = \frac{\overline{r}'(t)}{||\overline{r}'(t)||}$. Note that the tangent vector is different from a tangent vector. Also note that $\overline{T}(t)$ is a unit vector.
- 2. Defn: The normal vector is $\bar{N}(t) = \frac{\bar{T}'(t)}{||\bar{T}'(t)||}$. This points inwards from the curve. If the curve does not bend then the normal vector does not exist.

§12.6 Curvature

- 1. Defn: The curvature is $\kappa(t) = \frac{||\bar{T}'(t)||}{||\bar{r}'(t)||}$. Another way to get it is $\kappa(t) = \frac{||\bar{v} \times \bar{a}||}{||\bar{v}||^3}$. The first is the formal definition while the second is usually easier to calculate.
- 2. Meaning: The more bendy the curve is at a point the higher the curvature at that point. A straight line has curvature 0.

Preview from Notesale.co.uk Page 2 of 2