Differential Geometry

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Definition 1.1. 1. A **parametrized differentiable curve** is a map $\alpha : I \to \mathbb{R}^3$, $I(a, b) \subset \mathbb{R}$.

2. the vector $\alpha'(t) = (x'(t), y'(t), z'(t))$ is called the **tangent vector** of α at $\alpha(t)$
3. α is called **planar** if there exists a plane $P \subset \mathbb{R}^3$ s.t. $\alpha(I) \subset P$. By a rigid motion $P = \{z = 0\}$ and $\alpha(t) = (x(t), y(t), 0)$

1. α is not required to be injective, e.g. $\alpha(t) = (t^3 - 4t, t^2 - 4)$