

MATH 4250/6250 Problem Set 5
Due Friday, February 13

Replacement for problem 1(a):

Let $\vec{\beta}(u)$ be a regular curve with Frenet frame $\vec{T}, \vec{N}, \vec{B}$, and consider the following three ruled surfaces:

$$\vec{x}(u, v) = \vec{\beta}(u) + v\vec{T}$$

$$\vec{x}(u, v) = \vec{\beta}(u) + v\vec{N}$$

$$\vec{x}(u, v) = \vec{\beta}(u) + v\vec{B}$$

For each of these three surfaces, determine for which values of (u, v) the partial derivatives \vec{x}_u and \vec{x}_v are dependent (so that \vec{x} is not a regular surface).