

GLOBAL THEOREMS FOR CLOSED PLANE CURVES

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Let X be a closed plane curve given by a four times continuously differentiable map $X: C \rightarrow \mathbf{R}^2$ from the circle C into Euclidean two-dimensional space \mathbf{R}^2 . The results announced here are typified by

THEOREM 1. *Under certain regularity conditions, the number of straight lines which are tangent to X at two points s and t of X and such that the unit normals to X at s and t are equal is equal to the number of straight lines which are tangent to X at two points s and t of X and such that the unit normals to X at s and t are unequal, plus the number of self-intersections of X , plus one-half the number of inflection points of X . In Figure 1 the double tangents of the first mentioned kind are drawn solid and the others are dashed.*

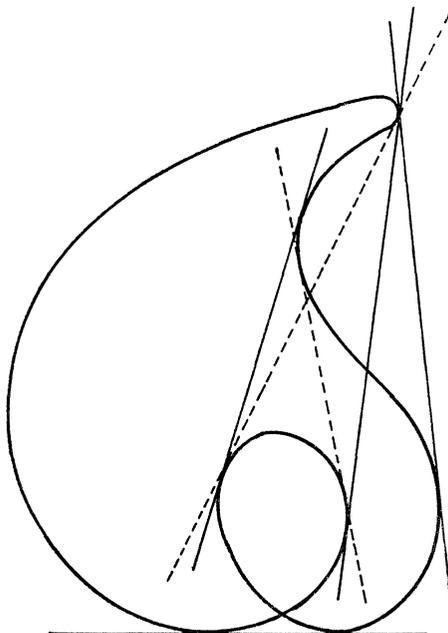


FIGURE 1

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