set of positive integers δ_i such that $Q_1(y_0, y_1^{\delta_1}, \cdots, y_\nu^{\delta_\nu})$ would be resolvable into more than K_m factors, which is not the case. Each of the functions (7) is a factor of $f(x)$.

When we multiply together the simple functions coming from the irreducible binomial factors of Q which do not involve y_0 and the irreducible functions coming from the remaining irreducible factors of Q, we have a resolution of $f(x)$ into factors belonging to the class C. It is easily seen that this factorization is unique. Thus we have the following theorem.

THEOREM. *A function $f(x)$ belonging to the class C can be expressed in one and only one way as a product*

$$f(x) = I_1(x) \cdots I_m(x) S_1(x) \cdots S_n(x),$$

where each factor belongs to C, the I's are irreducible functions, and the S's are simple functions, $b_0 + \sum b_i \exp(\beta_i x)$, such that the ratio of any two β's in different functions is irrational.

BELL TELEPHONE LABORATORIES

THE NUMBER OF TRISECANTS OF A SPACE CURVE OF ORDER m WHICH MEET AN i-FOLD SECANT*

BY L. A. DYE

The number of trisecants of a space curve C_m, of order m, which meet a general line was determined by Zeuthen,† but if the line happens to be an i-fold secant, $i > 2$, it lies on the ruled surface of trisecants and the formula fails. In algebraic geometry some extension of Zeuthen's work to cover this neglected case is often necessary, so by means of a correspondence we show that the number of trisecants of a C_m which meet an i-fold secant l is

$$(m-2)[h - m(m-1)/6] - i(h - m + 2) + i(i-1)(i-2)/6,$$

where h is the number of apparent double points of C_m.

In the plane determined by l and one of the $h' = h - i(i-1)/2$

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† H. G. Zeuthen, *Sur les singularités des courbes gauches*, Annali di Matematica, (2), vol. 3 (1869), pp. 175–217.

bisecants of C_m through any point λ on l, let A, B be the points of C_m on the bisecant and let C_j, $[j=1, 2, \cdots, (m-i-2)]$, denote the points of C_m not on l or the bisecant. The lines AC_j and BC_j determine $2(m-i-2)$ points μ on l, and when all of the h' bisecants through the point λ are considered there are $2(m-i-2)h'$ points μ determined by each point λ. Since the relationship between the points λ and μ is symmetrical, there exists a $[2(m-i-2)h', 2(m-i-2)h']$ correspondence. The $4(m-i-2)h'$ coincidences of this correspondence fall into three classes.

1. In the plane determined by l and a trisecant of C_m meeting l let A, B, C be the points of C_m on the trisecant. If the line is thought of as AB, then AC and BC each account for a coincidence. Similarly the line may be taken as AC or BC, so that 6 coincidences arise from each of the x trisecants of C_m meeting l.

2. Since there are $r=m(m-1)-2h$ tangents to C_m meeting an arbitrary line, there are $r'=r-2i$ tangents meeting l. In the plane of one of these tangents and l, let $A\equiv B$ be the point of tangency and C_j any one of the $m-i-2$ residual intersections of C_m not on l. For each line AC_j there arises one coincidence due to BC_j, hence there are $(m-i-2)r'$ coincidences due to the tangent lines meeting l.

3. In the plane determined by l and a tangent to C_m at one of the i intersections with l, call the point of tangency $A\equiv B$. Join A to one of the $m-i-1$ residual intersections C_j of C_m, then the lines joining B to the $m-i-2$ remaining points C_k determine $m-i-2$ coincidences. Since there are $m-i-1$ choices for C_j, and i points on l, there are $i(m-i-1)(m-i-2)$ coincidences accounted for in this case.

We now solve the equation

$$4(m-i-2)h' = 6x + (m-i-2)r' + i(m-i-1)(m-i-2),$$

and obtain

$$x=(m-2)[h-m(m-1)/6]-i(h-m+2)+i(i-1)(i-2)/6.$$

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