let the cognate functions of $f(p)$, obtained without departing from such definite values, (obtained, in other words, by proceeding without reference to the surd character of y_1, y_2, &c.,) be,

$$\phi_1, \phi_2, \ldots\ldots, \phi_n \ldots\ldots\ldots\ldots \quad (10)$$

Then if

$$(x-\phi_1)(x-\phi_2)\ldots(x-\phi_n) = x^n + B_1 x^{n-1} + B_2 x^{n-2} + \&c.,$$

the coefficients, B_1, B_2, are equal to expressions which are rational as respects all surds except y_1, y_2, &c. In other words, no surds not included in the series y_1, y_2, &c., enter into these coefficients. The proof is the same as in the Proposition.

Cor. 4. In the case supposed in the preceding Corollary, it may be shown, as in Cor. 1, that, if the unequal terms in (10), (the definite values of y_1, y_2, &c., being understood to be adhered to), be,

$$\phi_1, \phi_2, \ldots\ldots\ldots, \phi_t,$$

and if $f(p)$ be in a simple form, and we write

$$(x-\phi_1)(x-\phi_a)\ldots\ldots(x-\phi_c) = X_1,$$

where the number of terms, ϕ_1, ϕ_a, ..., ϕ_c, is less than t, these terms being terms in (10), X_1 cannot involve, in the coefficients of the powers of x, merely the surds y_1, y_2, &c. For, if X_1 did involve merely these surds, ϕ_1 would be a root of the equation, $X_1 = 0$; and therefore (Cor. Prop. V.) all the expressions, ϕ_1, ϕ_2, ..., ϕ_t, would be roots of that equation; the definite values given to y_1, y_2, &c., being adhered to in all the expressions, ϕ_1, ϕ_2, ..., ϕ_t. But these expressions are, by hypothesis, unequal. Therefore the equation, $X_1 = 0$, has t unequal roots: which, since the equation is of a degree lower than the t^{th}, is impossible. Therefore X_1 cannot involve, in the coefficients of the powers of x, merely the surds y_1, y_2, &c.

Cor. 5. In the case supposed in Cor. 3, let the unequal terms in the series (10), be, ϕ_1, ϕ_2, ..., ϕ_t; and let

$$(x-\phi_1)(x-\phi_2)\ldots\ldots(x-\phi_t) = x^t + b_1 x^{t-1} + b_2 x^{t-2} + \&c.$$

Then the coefficients b_1, b_2, &c., are equal to expressions involving no surds which do not occur in the series y_1, y_2, &c.; and, if $f(p)$ be in a simple form, each of the unequal terms, ϕ_1, ϕ_2, ..., ϕ_t, recurs the same number of times in (10) The proof is the same as in Cor. 2.