PROOF.—Draw F′M′ perpendicular to OB, draw through F a parallel CP to C′P′, and join OP′, producing it to cut CF in P.

Then LQ : QS :: OL : FM :: OK : GH :: C′O : C′G
:: C′O : C′P′

∴ the △'s LQS and OC′P′ have an angle common and the sides about that angle proportional.

∴ ∠SLQ = ∠P′OC′

∴ LF is parallel to OP.

Hence OL : FP :: CL : CF
:: QL : QS, since the △'s QSL, CFL are similar
:: OL : FM

∴ FP = FM.

But F′P′ : FP :: OF′ : OF
:: F′M′ : FM

But FP = FM

∴ F′P′ = F′M′

and C′ is the centre of circle AGB

∴ a circle with centre F′ and radius F′M′ will touch both OE and OB and will touch the circle AGB at P′.

The Algebraic Solution of the Cubic and Quartic in x by means of the Substitution

$$\frac{\lambda x_1 + \mu}{1 + x}$$

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