

XXII. *Two Theorems*, by Edward Waring,  
M. A. Lucasian Professor of Mathematics in the University of Cambridge, and  
F. R. S. In a Letter to Charles Morton,  
M. D. Sec. R. S.

T H E O R E M A I.

F I G U R A I.

Read April 25, 1765. **I**N datâ Ellipsi inscribantur duo (*n*)  
Laterum Polygona *abcde*, &c. et  
*pqrst*, &c. ad Puncta respectiva *a, b, c, d, e*, &c.  
*p, q, r, s, t*, &c. ducantur Tangentes *AB, BC,*  
*CD, DE*, &c. et *PQ, QR, RS, ST*, &c.  
et sint

$\angle abB = \angle cbC, \angle bcC = \angle dcD, \angle cdD$   
 $= \angle edE, \&c. \text{ et } \angle pqQ = \angle rqR, \angle qrR =$   
 $\angle srS, \angle rsS = \angle tsT, \text{ et sic deinceps.}$

Et erit Summa Laterum  
 $ab + bc + cd + de + \&c. = pq + qr + rs + st + \&c.$

F I G U R A 2.

Cor. Ducatur in Ellipsi Polygonum *abcde* &c.  
(*n*) Laterum Methodo supra traditâ; inscribatur etiam  
aliud Polygonum *abklm* &c. (*n*) Laterum quovis  
alio

alio Modo, cujus unus Angulus ponitur ad Punctum  
(*a*), et Summa  $ab + bc + cd + de + \&c.$  major  
est quam Summa  $ab + bk + kl + lm + \&c.$

## THEOREMA II.

### TAB. IV. FIGURA I.

Describantur circa datam Ellipſim duo (*n*) La-  
terum Polygona ABCDE &c. et PQRST &c.  
quorum Puncta Contactuum respective sunt *a, b, c, d, e,*  
&c. et *p, q, r, s, t,* &c.

Et ſint

$$\overline{\text{Tang.} + \text{Seca. Comp.} \angle aBb : \overline{\text{Tan.} + \text{Seca. Comp.} \angle cCb}} :: bC : bB, \text{ et}$$

$$\overline{\text{Tang.} + \text{Seca. Comp.} \angle cCb : \overline{\text{Tan.} + \text{Seca. Comp.} \angle cDd}} :: cD : cC, \text{ et}$$

$$\overline{\text{Tang.} + \text{Seca. Comp.} \angle cDd : \overline{\text{Tan.} + \text{Seca. Comp.} \angle eEd}} :: Ed : aD \&c.$$

Et ſic

$$\overline{\text{Tang.} + \text{Seca. Comp.} \angle pQq : \overline{\text{Tan.} + \text{Seca. Comp.} \angle qRr}} :: qR : qQ, \text{ et}$$

$$\overline{\text{Tang.} + \text{Seca. Comp.} \angle qRr : \overline{\text{Tan.} + \text{Seca. Comp.} \angle sSr}} :: sR : rR, \text{ et}$$

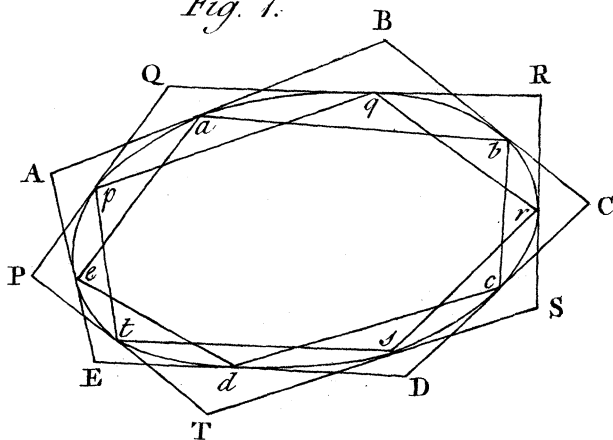
$$\overline{\text{Tang.} + \text{Seca. Comp.} \angle sSr : \overline{\text{Tan.} + \text{Seca. Comp.} \angle tTs}} :: Ts : sS, \text{ et ſic deinceps.}$$

Et erit Summa Laterum

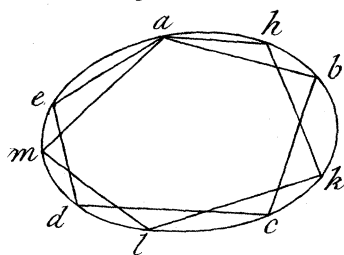
$$AB + BC + CD + DE + \&c. = PQ + QR + RS + ST + \&c.$$

FIGURA

*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

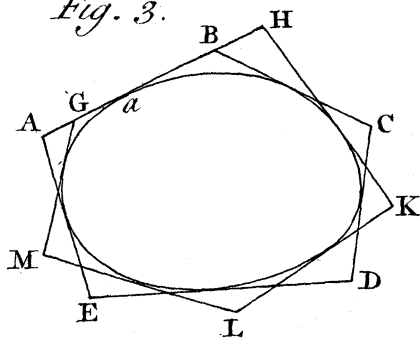


FIGURA 3.

Cor. Describatur circa Ellipsim Polygonum ( $n$ ) Laterum A B C D E, &c. Methodo, quæ prius data fuit; Describatur etiam circa Ellipsim aliud Polygonum G H K L M, &c. ( $n$ ) Laterum quavis aliâ Methodo, cujus unum Punctum Contactus ( $a$ ) est Punctum Contactus Polygoni A B C D E, &c.

Et Summa A B + B C + C D + D E + &c. minor erit quam Summa G H + H K + K L + L M + &c.

Consimiles Proprietates affirmari possunt de Polygonis Hyperbolas descriptis, &c.