VII. *De Sectione Anguli*, *Autore* A. de Moivre, R. S. S.

INeunte Anno 1707, incidi in Methodum quâ, Æquatione datâ hujus formæ.

$$ny + \frac{nn-1}{2\times 3} Ay^3 + \frac{nn-9}{4\times 5} By^5 + \frac{nn-25}{6\times 7} Cy^7$$

&c. $= a$,

Vel iſtius,

$$ny + \frac{1-nn}{2\times 3} Ay^3 + \frac{9-nn}{4\times 5} By^5 + \frac{25-nn}{6\times 7} Cy^7$$

&c. $= a$; ubi quantitates A, B, C, &c. repræſentant Coefficientes Terminorum præcedentium, Radices determinavi ad hunc modum.

Poſito $a + \sqrt{aa+1} = v$ in primo caſu.

$a + \sqrt{aa-1} = v$ in ſecundo.

$$\text{Erit } y = \frac{1}{2}\sqrt[n]{v} - \frac{\frac{1}{2}}{\sqrt[n]{v}} \text{ in primo caſu.}$$

$$y = \frac{1}{2}\sqrt[n]{v} + \frac{\frac{1}{2}}{\sqrt[n]{v}} \text{ in ſecundo.}$$

Solutiones autem iſtæ inſertæ fuerunt in Philoſophicis Tranſactionibus, Num. 309, pro menſibus *Jan. Feb. Mart*. ejuſdem anni.

Jam quibus perſpectum erit quo artificio Formulæ iſtæ inventæ fuerint, his procul dubio patebit aditus ad demonſtrationem ſequentis Theorematis.

Sit

Sit x Sinus Versus Arcus cujuslibet.
t Sinus Versus Arcus alterius.
1 Radius Circuli.

Sitque Arcus prior ad posteriorum ut 1 ad n, Tunc, assumptis binis Æquationibus quas cognatas appellare licet,

$$1 - 2z^{n} + z^{2n} = -2z^{n}t$$
$$1 - 2z + zz = -2zx.$$

Expunctoque z, orietur Æquatio qua Relatio inter x & t determinatur.

COROLLARIUM I.

Si Arcus posterior sit Semicircumferentia, Æquationes erunt.

$$1 + z^{n} = 0$$
$$1 - 2z + zz = -2zx.$$

e quibus si expungatur z, orietur Æquatio quâ determinantur Sinus Versi Arcuum qui sint ad Semicircumferentiam, semel, ter, quinquies, &c. sumptam, ut 1 ad n.

CORROLLARIUM II.

Si Arcus posterior sit Circumferentia, Æquationes erunt

$$1 - z^{n} = 0$$
$$1 - 2z + zz = -2zx.$$

e quibus si expungatur z, orietur Æquatio quâ determinantur Sinus Versi Arcuum qui sint ad Circumferentiam, semel, bis, ter, quater, &c. sumptam, ut 1 ad n.

CORALLARIUM III.

Si Arcus posterior sit 60 Graduum, Æquationes erunt

$$1 - z^n + z^{2n} = 0$$
$$1 - 2z + zz = -2zx.$$

e quibus ſi expungatur z, orietur Æquatio quâ determinantur Sinus Verſi Arcuum qui ſint ad Arcum 60 Graduum.

$$\text{per} \left\{ \begin{matrix} 1, & 7, & 13, & 19, & 25 \\ 5, & 11, & 17, & 23, & 29 \end{matrix} \;\&c. \right\} \text{multiplicatum}$$

ut 1 ad n.

Si Arcus poſterior ſit 120 Graduum, Æquationes erunt

$$1 + z^n + z^{2n} = 0$$
$$1 - 2z + zz = -2zx.$$

e quibus ſi expungatur z, orietur Æquatio quâ determinantur Sinus Verſi Arcuum qui ſint ad Arcum 120 Graduum.

$$\text{per} \left\{ \begin{matrix} 1, & 4, & 7. & 10, & 13 \\ 2, & 5, & 8, & 11, & 14 \end{matrix} \;\&c. \right\} \text{multiplicatum}$$

ut 1 ad n.

Novemb. 15.
1722.

VIII. *An*