

P R O B. XII.

Circuli Quadraturam determinare.

A Circulo initium faciam, qui omnium linearum curvarum simplicissima est, si curvæ simplicitas non ex æquationis, sed descriptionis (ut re verâ debet) simplicitate æstimetur.

Fig. 8.

Sit itaque Circuli Quadrans ASD in quo AM vocetur y , & ordinata MC z , & radius AL = r , tum ex Circuli natura erit $z^2 = r^2 - y^2$, ac proinde $z = \sqrt{r^2 - y^2}$ hunc valorem resolvo in seriem secundum Methodum celeberrimi D. *Isaaci Newtoni*, & invenio $z = r \frac{y^2}{2r} - \frac{y^4}{8r^3} + \frac{y^6}{16r^5} - \dots$ &c. quaerenda igitur est Curva AGH in qua PM = $r - \frac{y^2}{2r} + \frac{y^4}{8r^3} - \frac{y^6}{16r^5} - \dots$ &c. & invenietur per Prob. primum Curvam quaesitam definiri per hanc æquationem.

$$nry - \frac{my^3}{2r} - \frac{ly^5}{8r^3} - \frac{ky^7}{16r^5} = x^2; \text{ \& determinando.}$$

Quantitates, n, m, l, k , per Prob. secundum invenietur $n = 2$, $m = 3$, $l = \frac{5}{2}$, $k = \frac{7}{2}$, & substituendo

$$\text{hos valores, æquatio erit } 2ry - \frac{y^3}{3r} - \frac{y^5}{20r^3} - \frac{y^7}{56r^5} = x^2. \text{ Unde } ry - \frac{y^3}{6r} - \frac{y^5}{40r^3} - \frac{y^7}{112r^5} = \frac{x^2}{2} \\ = GMq$$