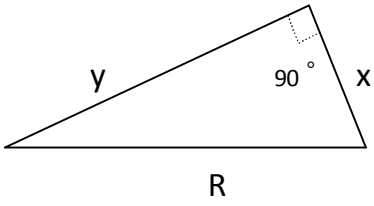
نظرية فيتاغورس ما بين ماضيها وحاضرها



$$x'.\,R'_1 = \left(\frac{x+R}{2}\right)^2 - \left(R - \frac{x+R}{2}\right)^2 \;,\quad x\,\frac{\text{Area}}{R} = \frac{\text{Area}}{R'_1}\,x'$$

$$= \left(\frac{x+R}{2}\right)^2 - \left(R - \frac{x+R}{2}\right)\left(R - \frac{x+R}{2}\right)$$

$$= \left(\frac{x+R}{2}\right)^2 - \left(R^2 - 2R\,\frac{x+R}{2} + \left(\frac{x+R}{2}\right)^2\right)$$

$\therefore\; x'.\,R'_1 = R.x$

But $x' = R'_1 \;\Rightarrow\; (x')^2 = R.x$ …… eq n1 .

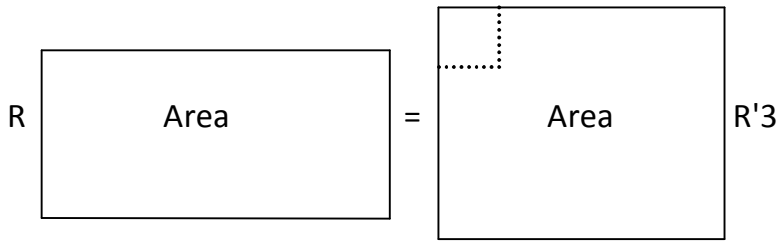
$$Y'.\,R'_2 = \left(\frac{y+R}{2}\right)^2 - \left(R - \frac{y+R}{2}\right)^2 \;,\quad y\,\frac{\text{Area}}{R} = \frac{\text{Area}}{R'_2}\,y'$$

$$= \left(\frac{y+R}{2}\right)^2 - \left(\left(R - \frac{y+R}{2}\right)\left(R - \frac{y+R}{2}\right)\right)$$

$$= \left(\frac{y+R}{2}\right)^2 - \left(R^2 - 2R\,\frac{y+R}{2} + \left(\frac{y+R}{2}\right)^2\right)$$

$\therefore\; y'.\,R'_2 = R.y$

But $y' = R'_2 \;\Rightarrow\; (y')^2 = R.y$ …… eq n2 .



$$R'_3 (x + y)' = \left(\frac{R + (x + y)}{2} \right)^2 - \left((x + y) - \left(\frac{R + (x + y)}{2} \right) \right)^2$$

$$= \left(\frac{R + (x + y)}{2} \right)^2 - \left((x + y) - \left(\frac{R + (x + y)}{2} \right) \right)\left((x + y) - \left(\frac{R + (x + y)}{2} \right) \right)$$

$$= \left(\frac{R + (x + y)}{2} \right)^2 - \left((x + y)^2 - 2(x + y)\left(\frac{R + (x + y)}{2} \right) + \left(\frac{R + (x + y)}{2} \right)^2 \right)$$

∴ $R'_3 (X + y)' = (X + y) R$

But $R'_3 = (x + y)' \Rightarrow (R'_3)^2 = (x + y) R$ ..... eq n3 .

Add eq n1 and eq n2 we get

$(x')^2 + (y')^2 = R.x + R.y$

∴ $(x')^2 + (y')^2 = R (x + y)$ ..... eq n4 .

from eq n3 $(R'_3)^2 = (x + y) R$, substitute this value in eq n4 we get

$$(x')^2 + (y')^2 = (R'_3)^2$$