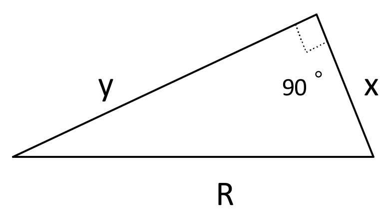
نظرية فيتاغورس ما بين ماضيها وحاضرها



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

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

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

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

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

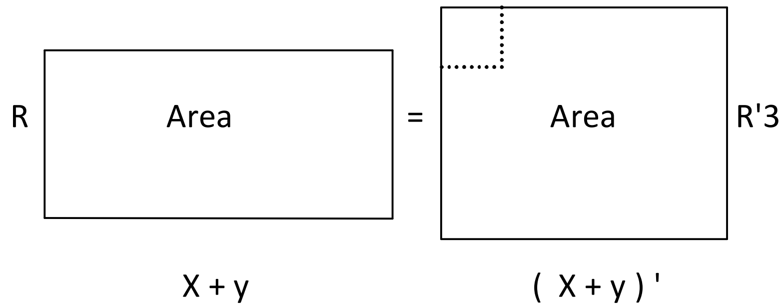
$$Y'.\ R'_2 = \left(\frac{y+R}{2}\right)^2 - \left(R - \frac{y+R}{2}\right)^2 , \quad y\ \underset{R}{\boxed{\text{Area}}} = \underset{R'_2}{\boxed{\text{Area}}}\ y'$$

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

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

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

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



$R'_3\,(x + y)' =$

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

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

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

$\therefore$ $R'_3\,(X + y)' = (X + y)\,R$

But $R'_3 = (x + y)'$ $\Rightarrow$ $(R'_3)^2 = (x + y)\,R$ ………………. eq$^{\underline{n}3}$.

Add eq$^{\underline{n1}}$ and eq$^{\underline{n2}}$ we get

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

$\therefore$ $(x')^2 + (y')^2 = R\,(x + y)$ …………………………………. eq$^{\underline{n4}}$.

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

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

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