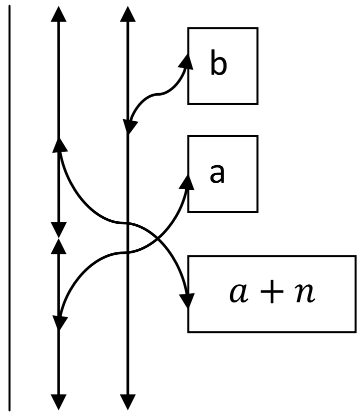
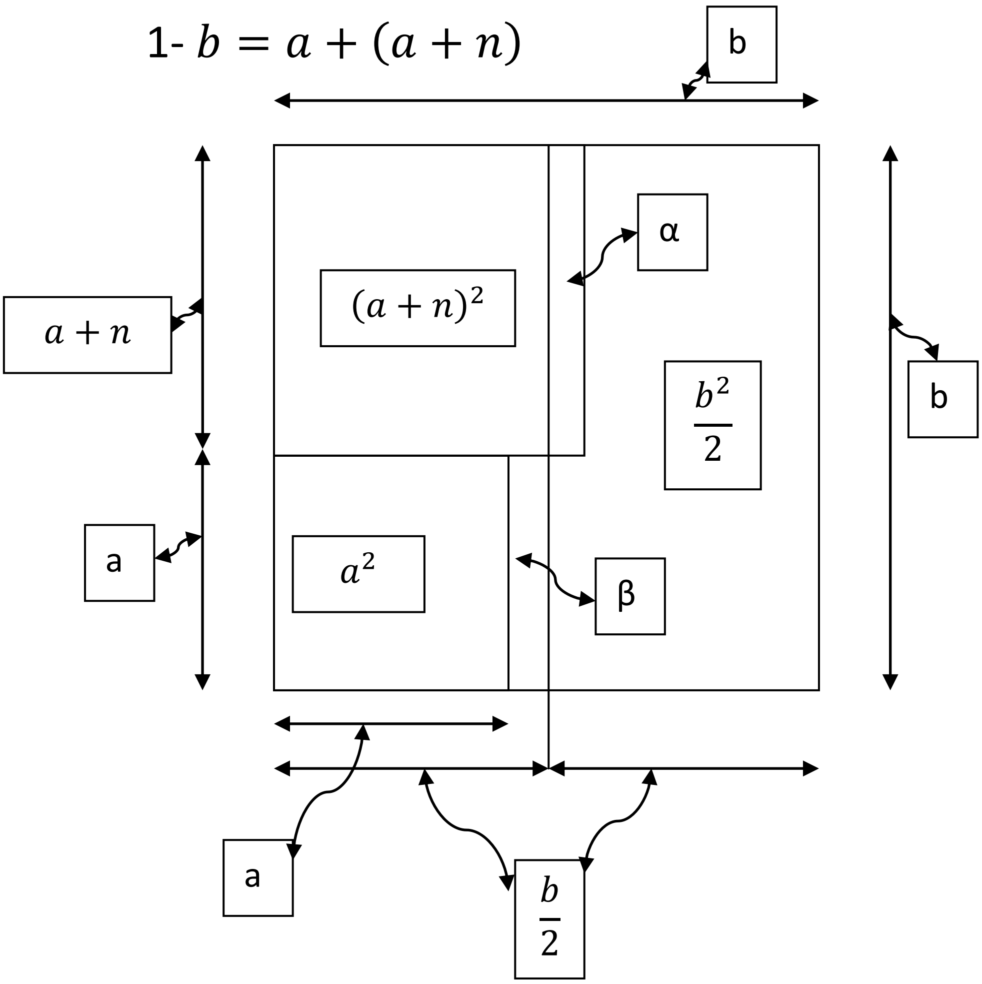


1- $b = a + (a+n)$



2- $b^2 = a^2 + (a+n)^2 + \beta - \alpha + \frac{b^2}{2}$

3- $\beta = a\left(\frac{b}{2} - a\right)$

4- $\alpha = (a+n)\left(a+n-\frac{b}{2}\right)$

5- $b^2 = a^2 + (a+n)^2 + \frac{b^2}{2} - \left((a+n)\left(a+n-\frac{b}{2}\right) - a\left(\frac{b}{2}-a\right)\right)$

6- We multiply each side by: b^{k-2}

7- $b^k = a^2b^{k-2} + (a+n)^2b^{k-2} + \frac{b^k}{2} - b^{k-2}\left((a+n)\left(a+n-\frac{b}{2}\right) - a\left(\frac{b}{2}-a\right)\right)$

8- From 7 we deduce: $b^k = x^k + y^k$

9- $x^k = \frac{b^k}{2}$

10- $y^k = a^2b^{k-2} + (a+n)^2b^{k-2} - b^{k-2}\left((a+n)\left(a+n-\frac{b}{2}\right) - a\left(\frac{b}{2}-a\right)\right)$

11- $b\ is\ odd \xrightarrow{yields} b^k is\ odd \xrightarrow{yields} \frac{b^k}{2} is\ not\ an\ integer$

12- From 11 we deduce that x^k is not an integer and so is x

13- If $b = a + (a+n)$ and b is odd then $b^k = x^k + y^k$ does not have integer solutions.

14- If b is even then $n = 0$

15- From 14: $b^k = 2a^2b^{k-2} + \frac{b^k}{2}$ and $a = \frac{b}{2}$

16- From 15: b^k can only be the sum of its halves.