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| A76 B163(158) C52301(3.29) D89 |

Vol. III ¶29

今有百鹿入城。家取一鹿，不盡，又三家共一鹿，適盡。問城中家幾何？答曰：七十五家。

Now there be an hundred deer entering a city. Each family taketh one deer, and there remain deer; also every three families share one deer thereof, and it just exhausteth the deer. We ask: how many families be there admist the city? Answer saith: seventy five families.

不盡: there remain; lit. exhausteth not. Compare 適盡, just exhausteth.

$f(n) = n + \frac{n}{3} = 100.$

術曰：以盈不足取之。假令七十二家，鹿盈四。令之九十家，鹿不足二十。置七十二於右上，盈四於右下。置九十於左上，不足二十於左下。維乘之。所得，并為實。并盈、不足為法。除之，即得。

Method saith: take it by the method of surplus and deficit. Supposing we make there be seventy two families, there be a surplus of four deer. Making it ninety families, there be a deficit of twenty deer. Put down seventy-two on the upper right, and the surplus, four, on the lower right. Put down ninety on the upper left, and the deficit, twenty, on the lower left. (linkage) Multiply them. Of those obtained, combine as the dividend. Combine the surplus and the deficit as the divisor. Dividing them, we are done.

A er. has 城下中 for 城中.

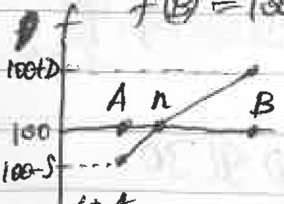
This is the method of false position.

- $A = 72: f(A) = 72 + \frac{72}{3} = 96 = 100 - 4$
- $B = 90: f(B) = 90 + \frac{90}{3} = 120 = 100 + 20$

i.e. $f(n) = 100$

$f(A) = 100 - S$, surplus $S = 4$

$f(B) = 100 + D$, deficit $D = 20$



Since f is affine, $\frac{B-n}{D} = \frac{n-A}{S}$

$n = \frac{BS+DA}{S+D} = \frac{\begin{vmatrix} B & A \\ -D & S \end{vmatrix}}{S+D}$.

維乘 etc.: see also Vol. II ¶25.

(Bad idea putting all this on one page)

A er. 鹿盡四 for 鹿盈四. B, C 鹿不盡四.

A, C. er. 為維乘 for 維乘. C er. 乘之四.

END ¶29