

Ques

$$\sum_{p \text{ prime}} \frac{1}{p} = \infty$$

O(1)

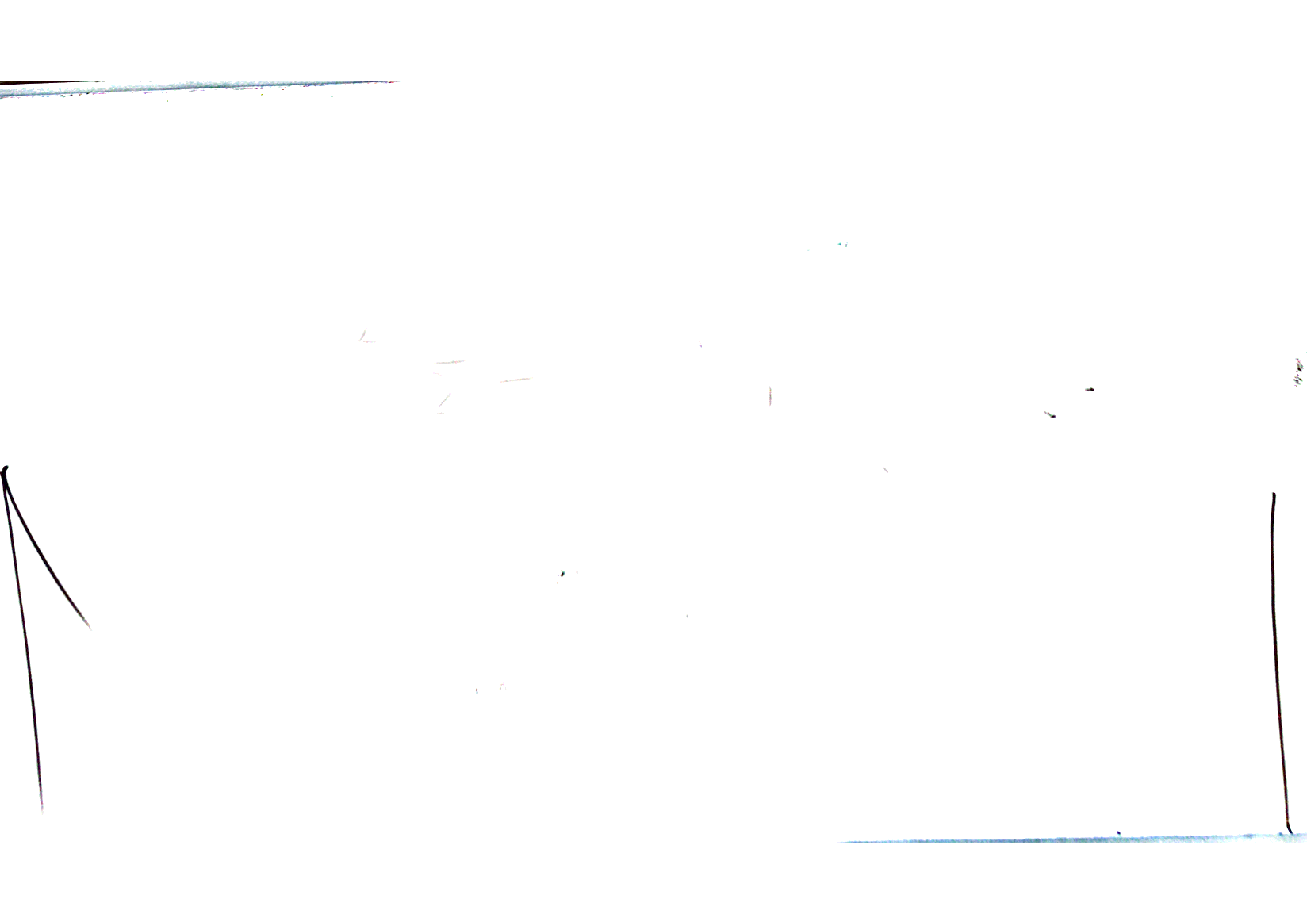
↓
En particular:
hay ∞ 's p's

$\sum_{p \leq x} \frac{1}{p} = \infty$

↓
 En particular:
 has ∞ 's prime

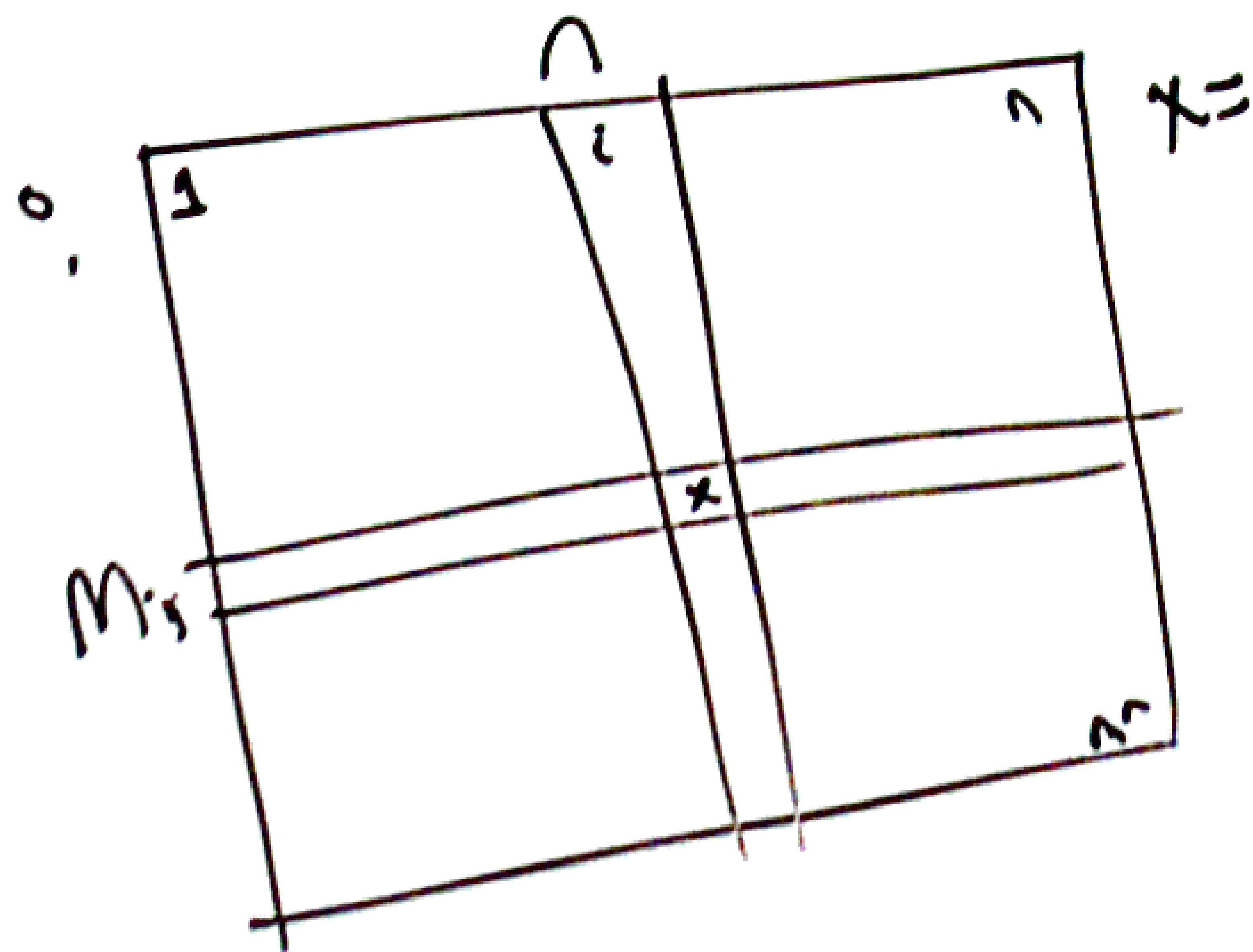
$$\sum_{i=1}^n \frac{1}{i} = O(\log n)$$

$$\#\{p \leq n\} = O(n)$$



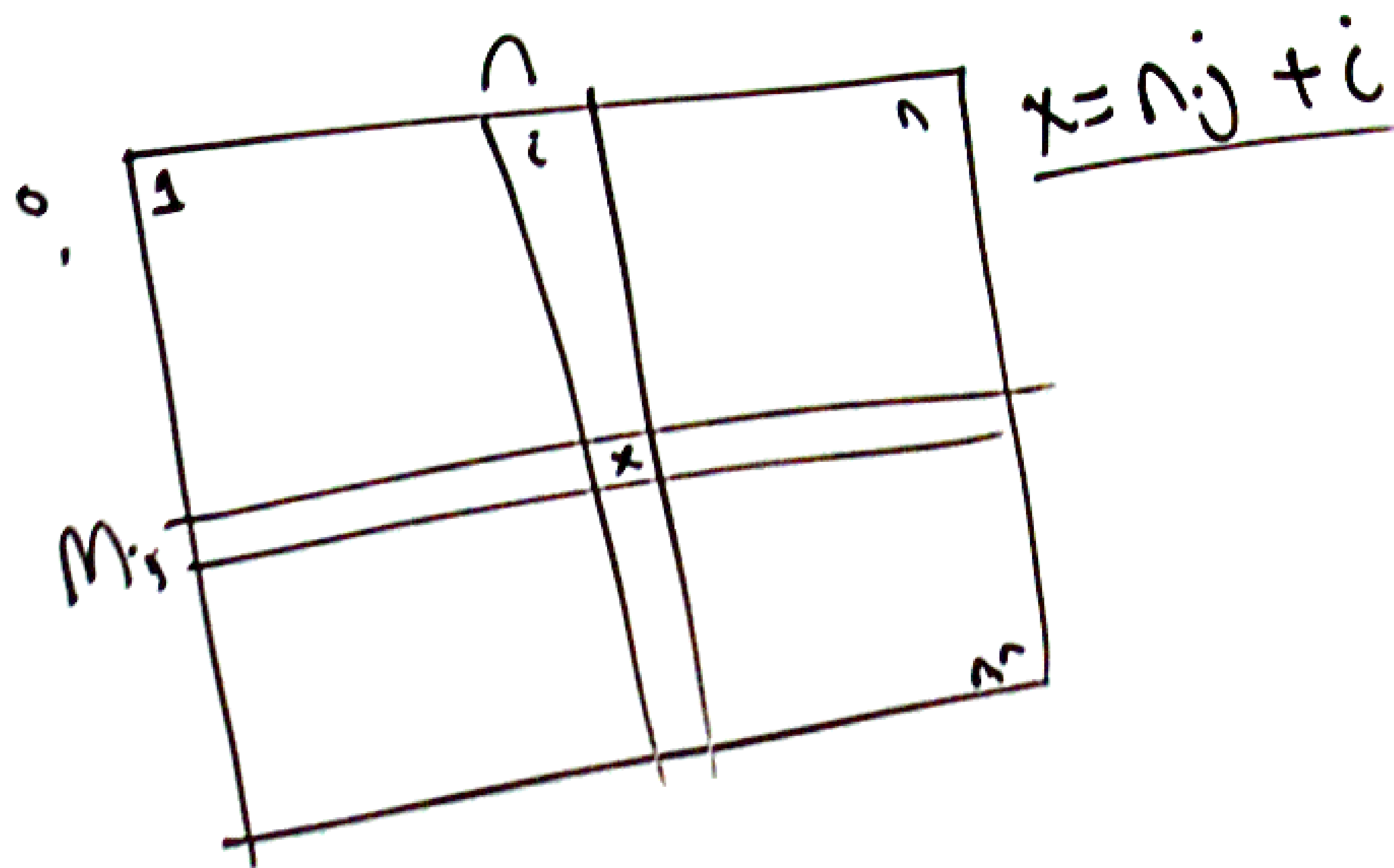
$$\varphi(n) = \# a \in [1, \dots, n] : (a, n) = 1$$

$$= \# b \in [r+1, \dots, r+n] : (b, n) = 1.$$



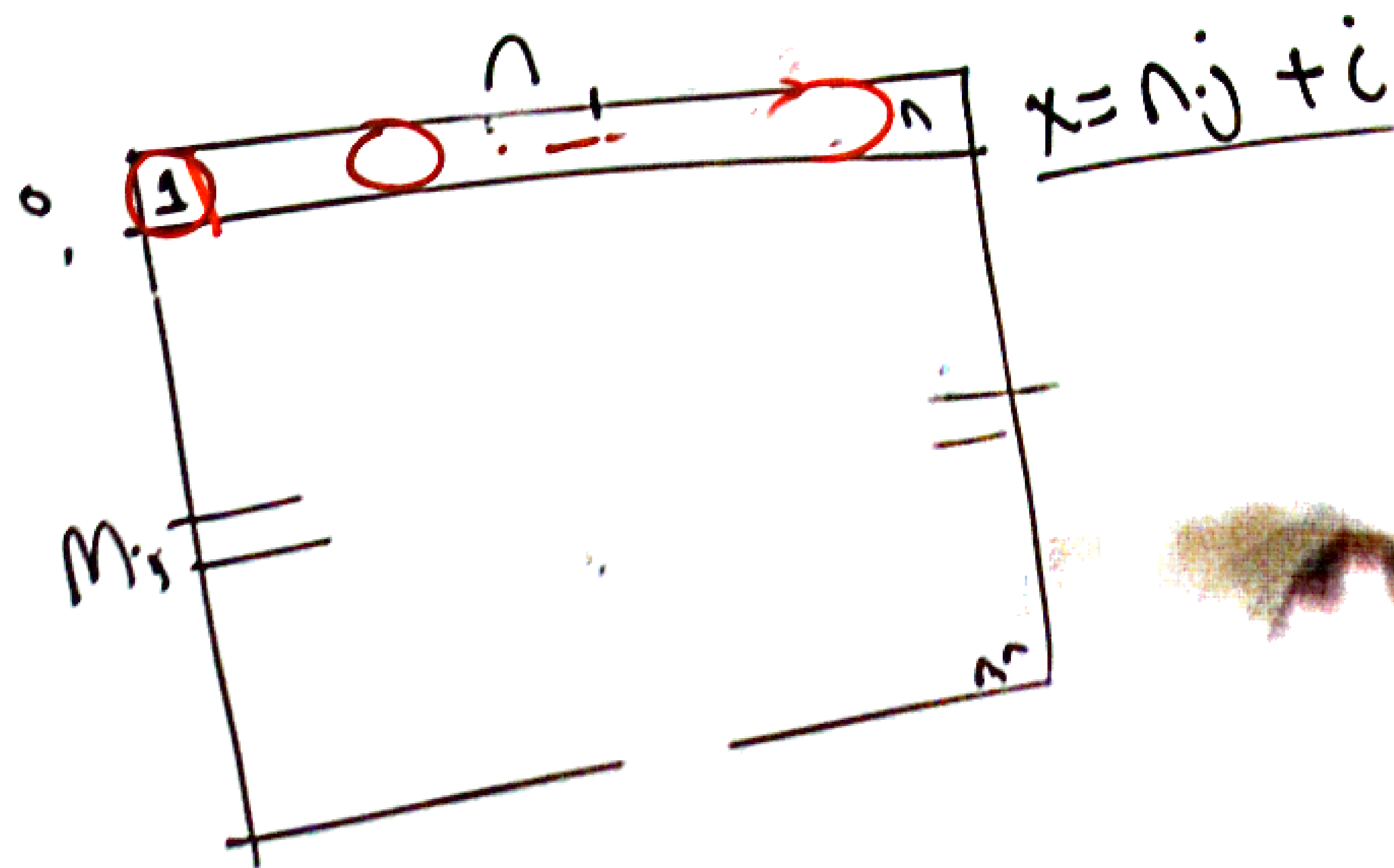
$$\varphi(n) = \# a \in [1, \dots, n] : (a, n) = 1$$

$$= \# b \in [r+1, \dots, r+n] : (b, n) = 1.$$



$$\varphi(n) = \# a \in [1, \dots, n] : (a, n) = 1$$

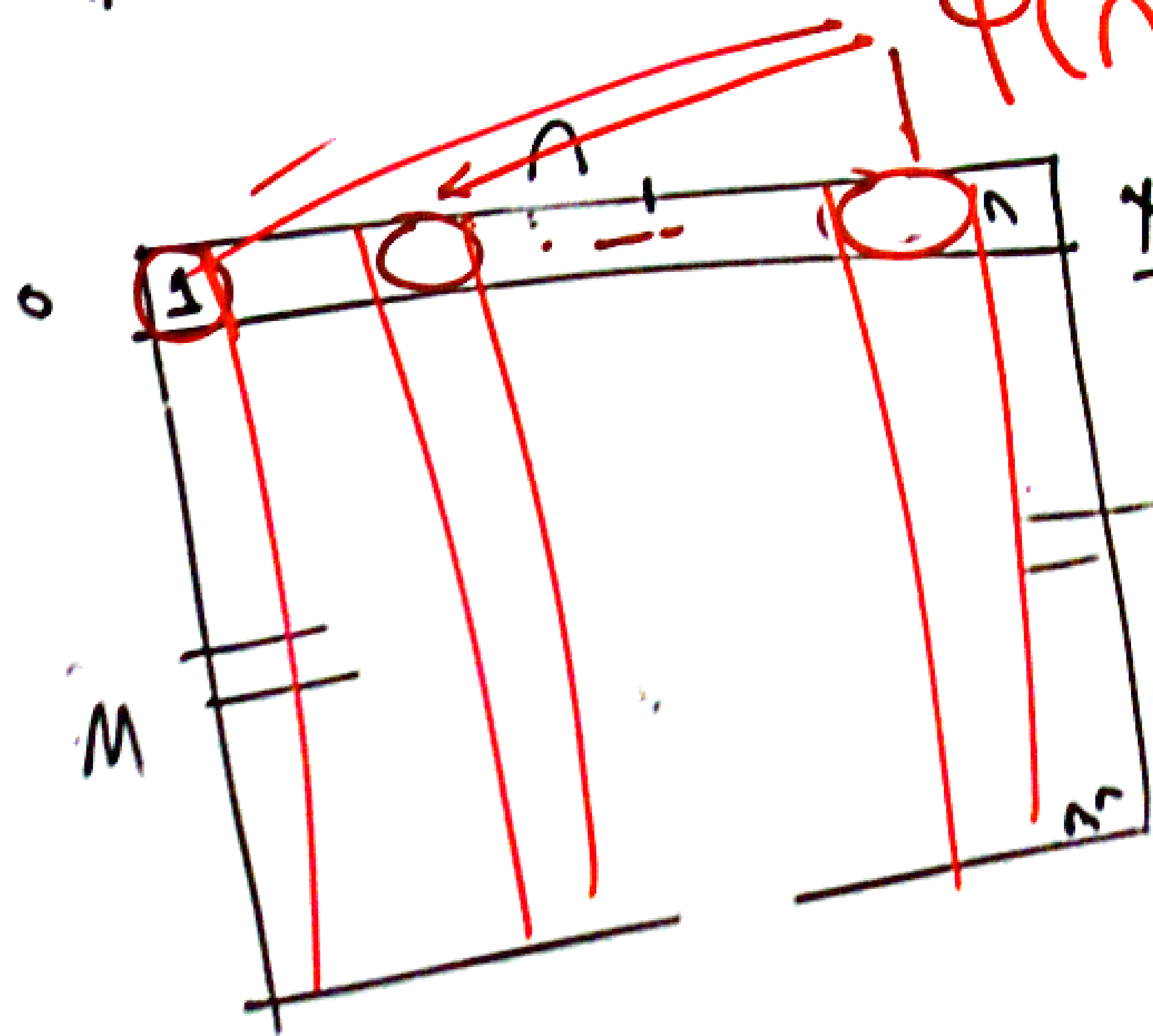
$$= \# b \in [r+1, \dots, r+n] : (b, n) = 1.$$



$$\varphi(n) = \# a \in [1, \dots, n] : (a, n) = 1$$

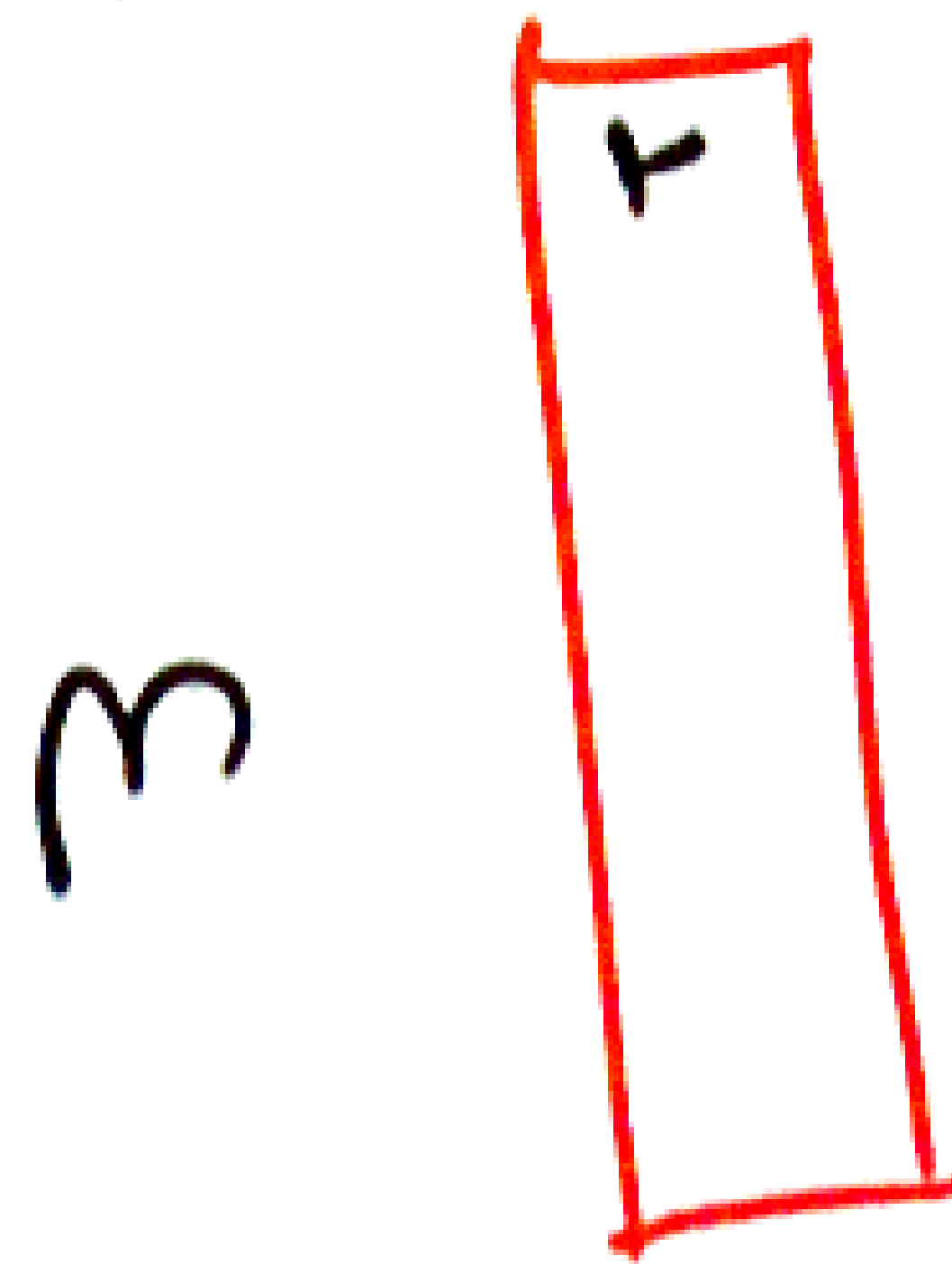
$$= \# b \in [r+1, \dots, r+n] : (b, n) = 1.$$

$\varphi(n)$: coprimos con n .



$$x = n \cdot j + i$$

$$(b, n) = 1 \Rightarrow (b + nk, n) = 1$$

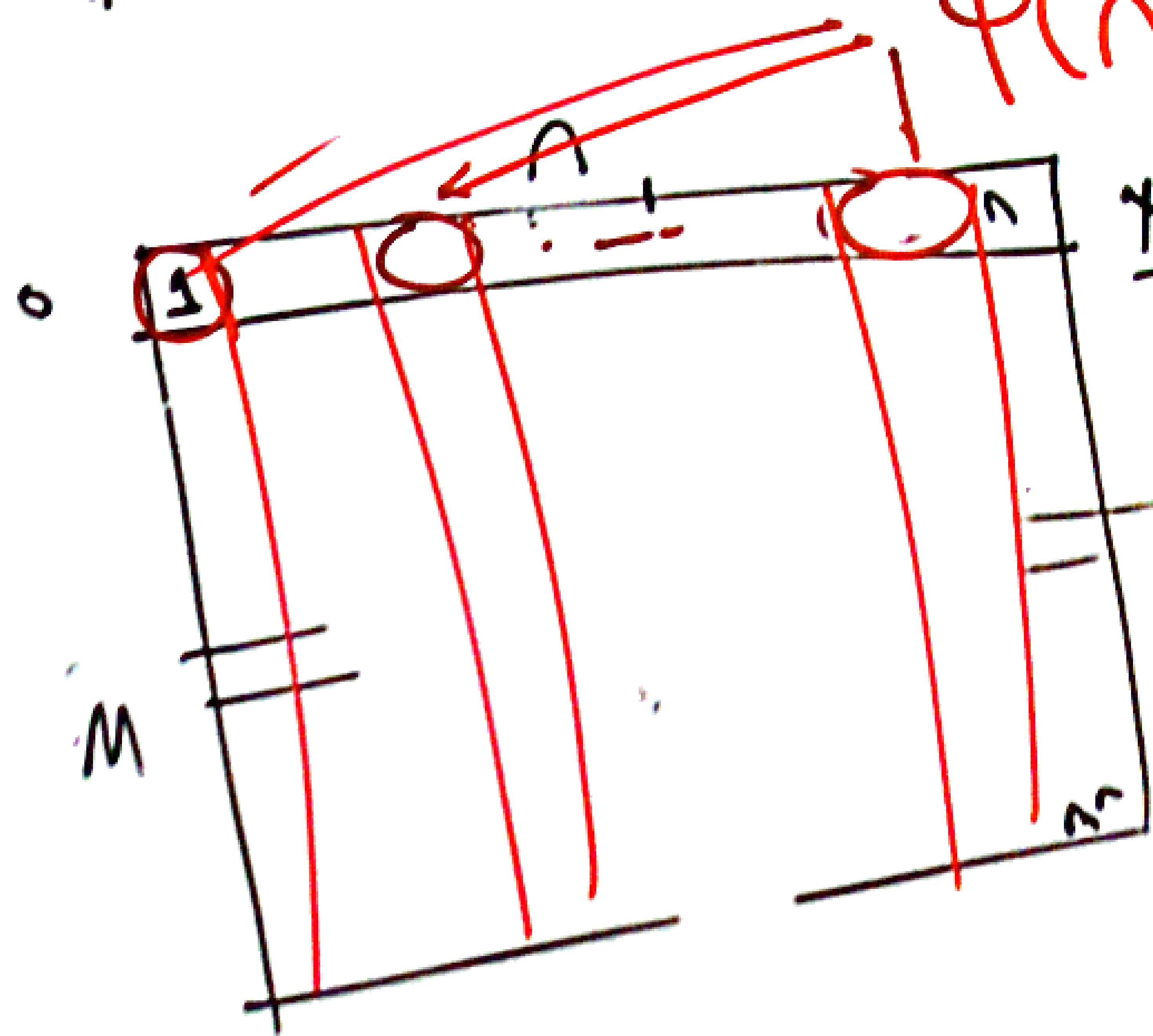


$$\varphi(n) = \# a \in [1, \dots, n] : (a, n) = 1$$

$$\# b \in [r+1, \dots, r+n] : (b, n) = 1.$$

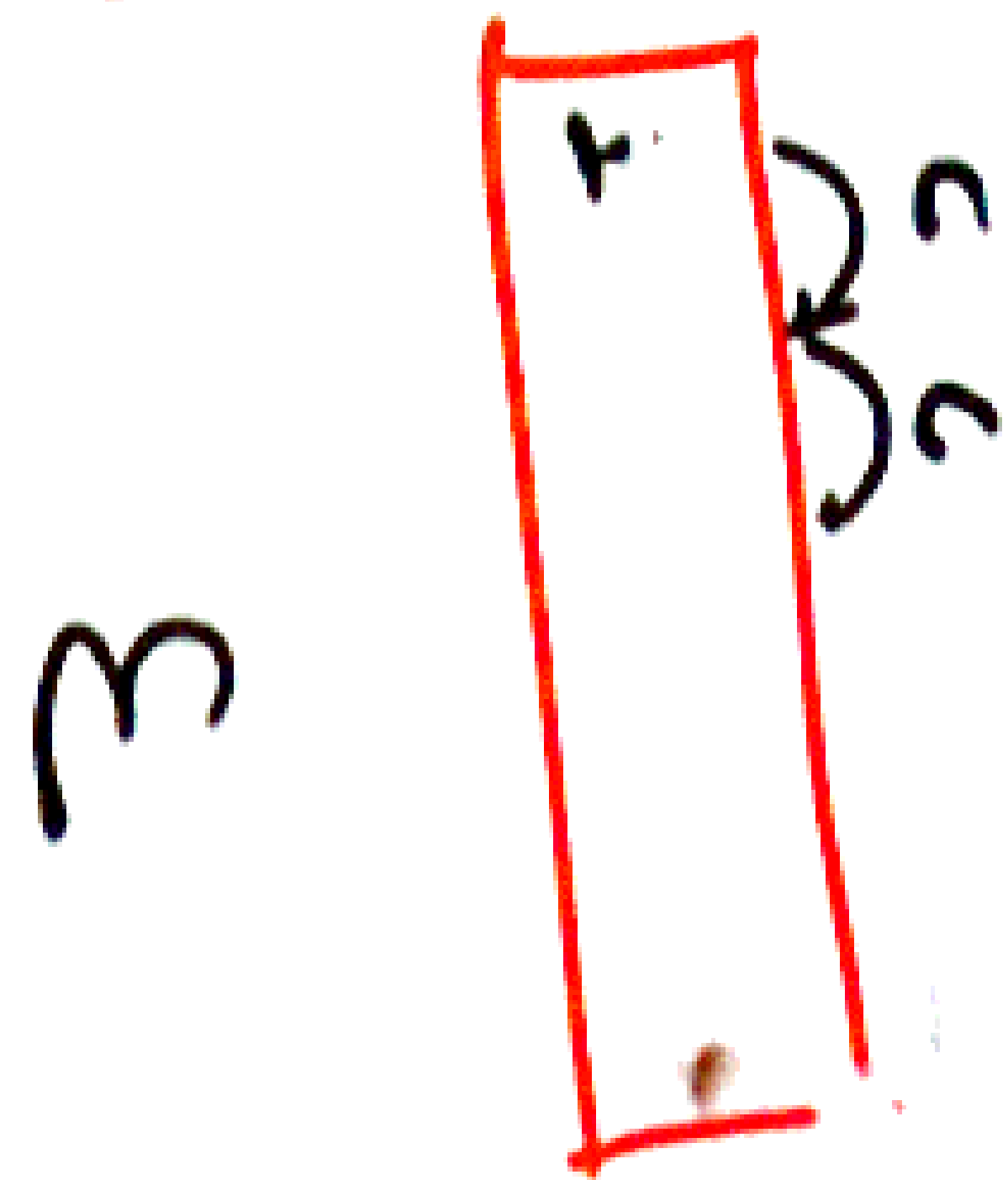
$\varphi(n)$: coprimos con n .

Todos los residuos $\% n$
en S son distintos



$$x = n \cdot j + i$$

$$(b, n) = 1 \Rightarrow (b + nk, n) = 1$$



$$S = \{r + 0 \cdot n, r + 1 \cdot n, \dots, r + (n-1) \cdot n\}$$

$$(r + j \cdot n) \% m = (r + i \cdot n) \% m$$

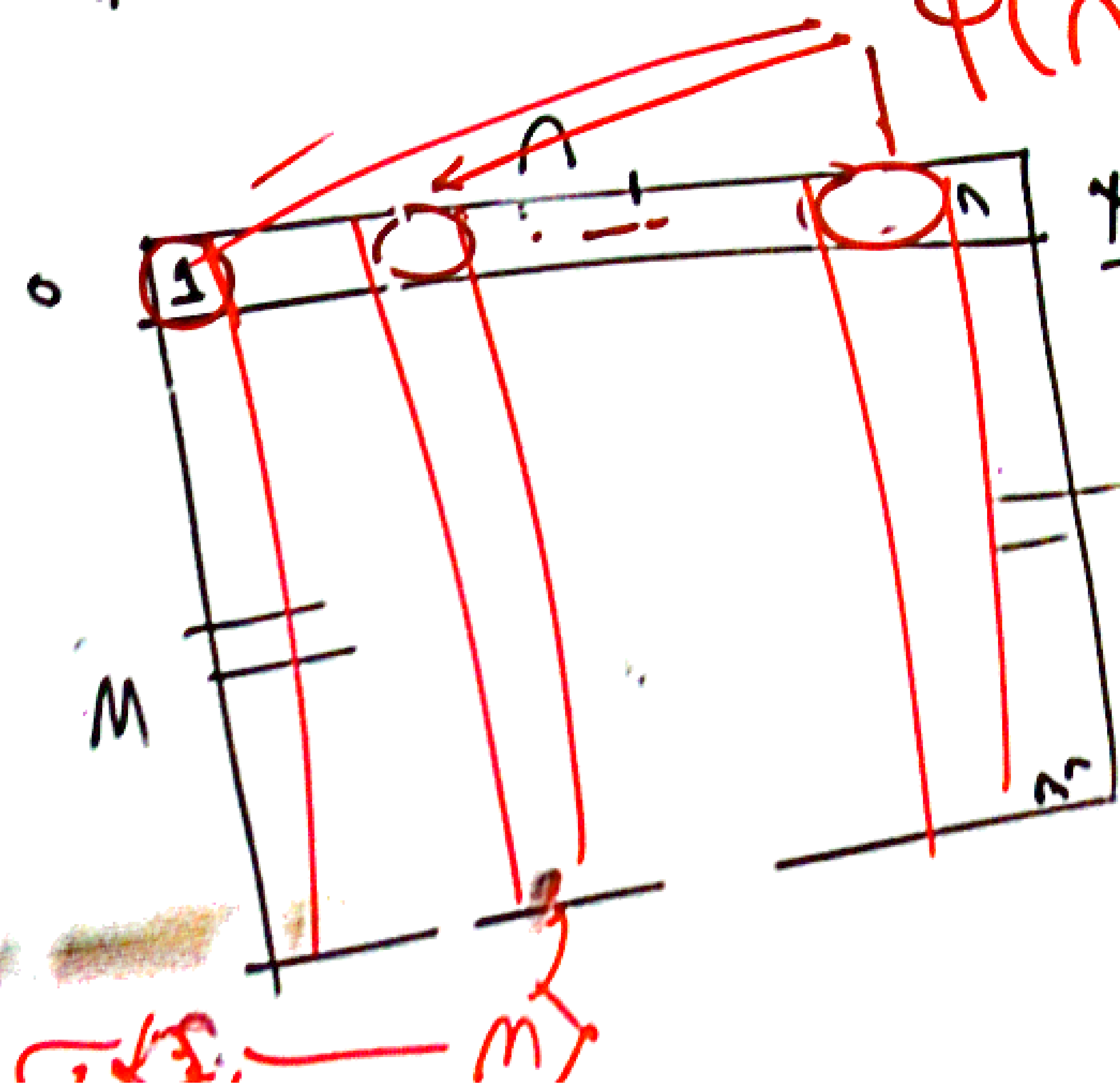
$$(i-j) \cdot n \% m = 0 \Rightarrow (i-j) \% m = 0 \Rightarrow i = j$$

$$\varphi(n) = \# a \in [1, \dots, n] : (a, n) = 1$$

$$= \# b \in [r+1, \dots, r+n] : (b, n) = 1.$$

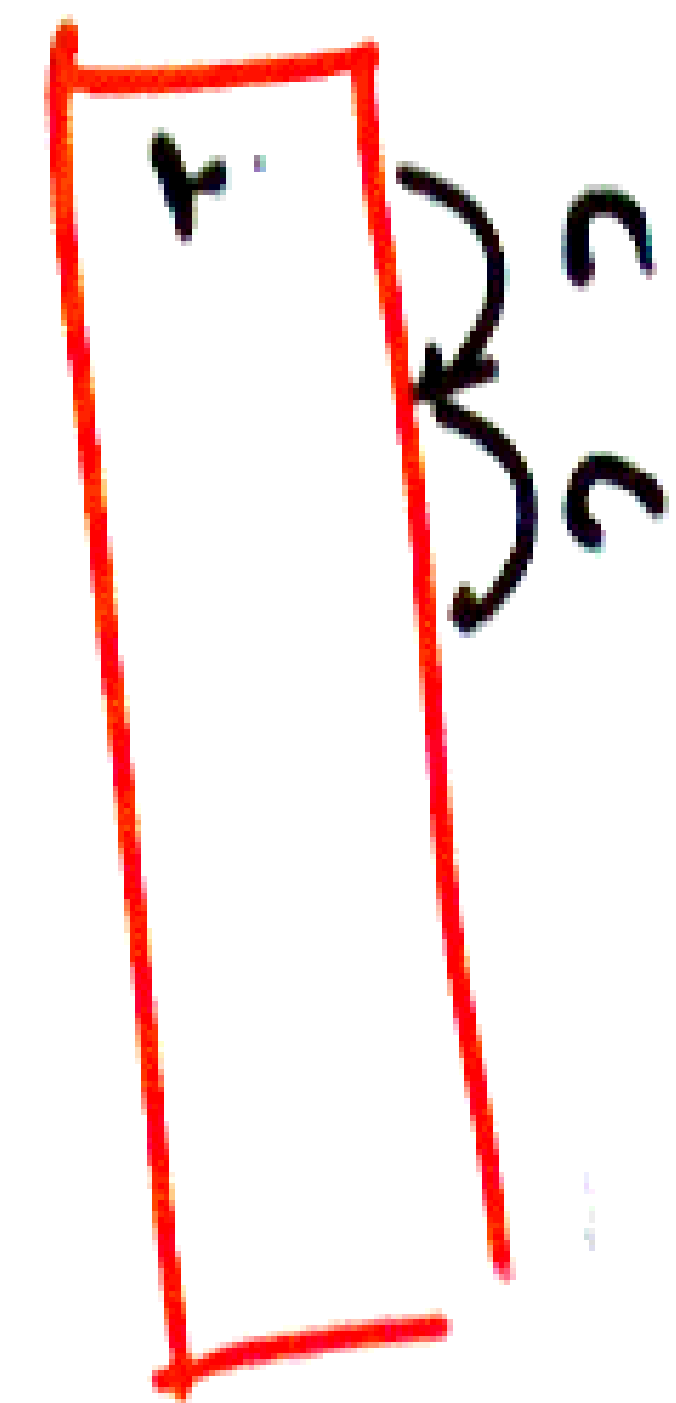
$\varphi(n)$: coprimos con n .

Todos los residuos $\% m$
en S son distintos



$$x = n \cdot j + i$$

$$(b, n) = 1 \Rightarrow (b + nk, n) = 1$$



$$S = \{r + 0 \cdot n, r + 1 \cdot n, \dots, r + (n-1) \cdot n\}$$

$$(r + j \cdot n) \% m = (r + i \cdot n) \% m$$

$$(i-j) \cdot n \% m = 0 \Rightarrow (i-j) \% m = 0 \Rightarrow i = j$$

$$\varphi(n) = \# a \in [1, \dots, n] : (a, n) = 1$$

$$= \# b \in [r+1, \dots, r+n] : (b, n) = 1.$$

$\varphi(n)$: coprimos con n .

$$\Rightarrow \varphi(mn) = \varphi(m)\varphi(n)$$

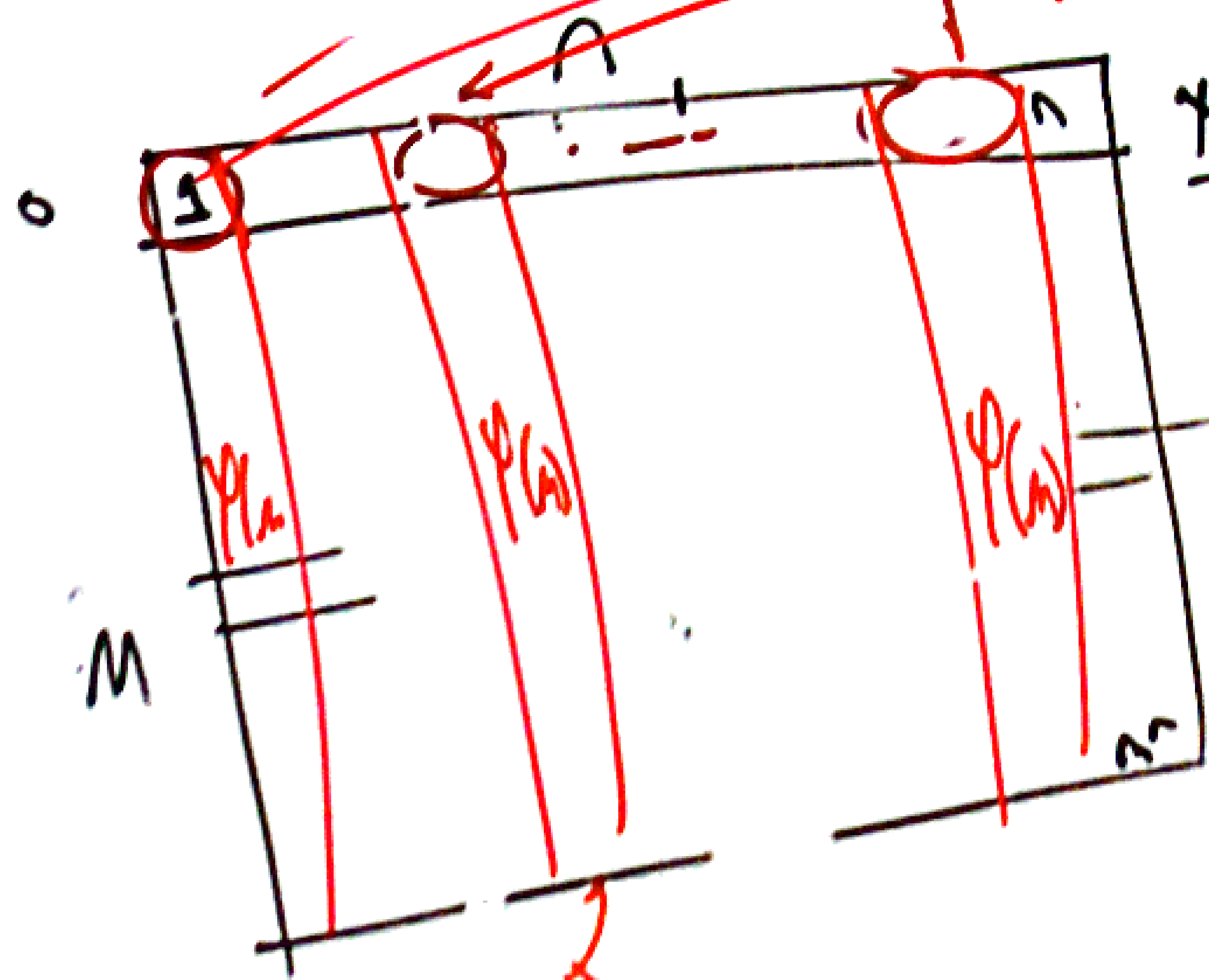
$$(b, n) = 1 \Rightarrow (b + nk, n) = 1$$

$$S = \{r + 0 \cdot n, r + 1 \cdot n, \dots, r + (m-1) \cdot n\}$$

$$(r + jn) \% m = (r + in) \% m$$

$$(i-j) \cdot n \% m = 0 \rightarrow (i-j) \% m = 0 \Rightarrow i=j$$

Todos los residuos $\% m$ en S son distintos



$$x = nj + i$$

$$(b, n) = 1 \Rightarrow (b + nk, n) = 1$$



$$\varphi(n) = \# a \in [1, \dots, n] : (a, n) = 1$$

$$= \# b \in [r+1, \dots, r+n] : (b, n) = 1.$$

$\varphi(n)$: coprimos con n .

$$\Rightarrow \varphi(mn) = \varphi(m)\varphi(n).$$

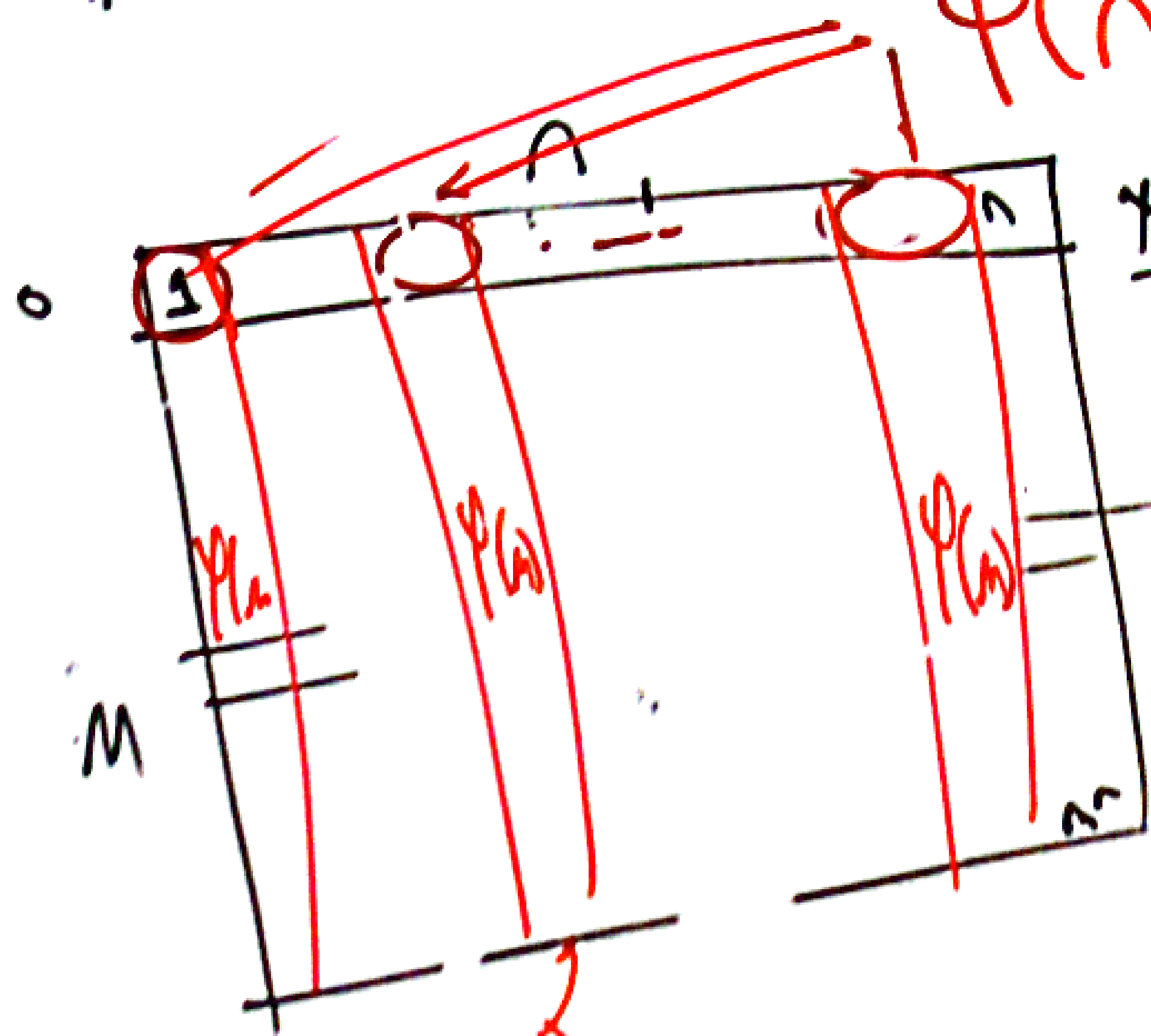
$$(b, n) = 1 \Rightarrow (b + kn, n) = 1$$

$$S = \{r + 0 \cdot n, r + 1 \cdot n, \dots, r + (m-1) \cdot n\}$$

$$(r + jn) \% m = (r + in) \% m$$

$$(i-j) \cdot n \% m = 0 \rightarrow (i-j) \% m = 0 \Rightarrow i = j$$

Todos los residuos $\% m$ en S son distintos



$$x = nj + i$$

$$(b, n) = 1 \Rightarrow (b + kn, n) = 1$$



$$\varphi(n) = \# a \in [1, \dots, n] : (a, n) = 1$$

$$= \# b \in [r+1, \dots, r+n] : (b, n) = 1.$$

$\varphi(n)$: coprimos con n .

$$\Rightarrow \varphi(mn) = \varphi(m)\varphi(n).$$

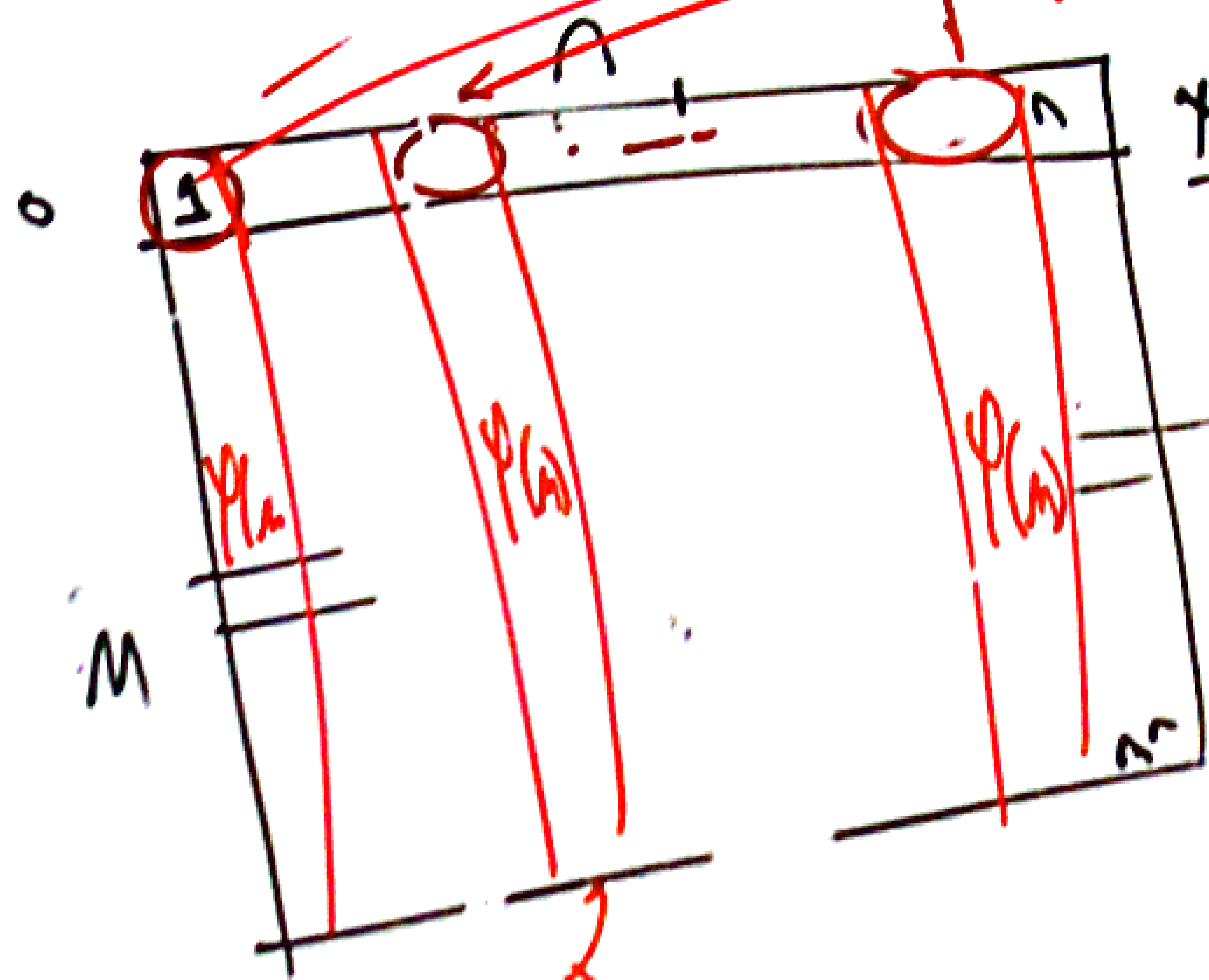
$$(b, n) = 1 \Rightarrow (b + nk, n) = 1$$

$$S = \{r + 0 \cdot n, r + 1 \cdot n, \dots, r + (m-1) \cdot n\}$$

$$(r + jn) \% m = (r + in) \% m$$

$$(i-j) \cdot n \% m = 0 \rightarrow (i-j) \% m = 0 \Rightarrow i = j$$

Todos los residuos $\% m$ en S son distintos



$$x = nj + i$$

$$(b, n) = 1 \Rightarrow (b + nk, n) = 1$$



m

n