Ask#1

$P_0 \longleftrightarrow P_1$ P_2 . . . P_{P-1}

int
$$
\begin{bmatrix}
\text{Send}(0, 1, \text{intvar}) \\
\text{Recv}(1, 0, \text{myintvar})
\end{bmatrix}
$$

$\text{Send}(1, 0, x)$

$\text{Recv}(0, 1, x)$

t_0

1000 times

t_1 $tt = \dfrac{t_1 - t_0}{1000}$

ASKHSH 2

P_0

1000
$\phi \circ \rho \grave{\epsilon} \varsigma$

1) MPI function
(Bcast)

P_1

P_2

P_{P-1}

1000
$\phi \circ \rho \grave{\epsilon} \varsigma$

Master

2) $\begin{cases} \text{for } i=1, .. P-1 \\ \quad \text{Send.} (0, i, int) \\ \text{end.} \end{cases}$

$\vdots$

Recv (0, myint)

$t_i = \dfrac{t_1 - t_0}{1000} \cdot \to P$

ΑΣΚΙΤΣΗ 3

P_0
P_1
P_{P-1}

A b

$n \times n$ $n \times 1$

y

$n \times 1$
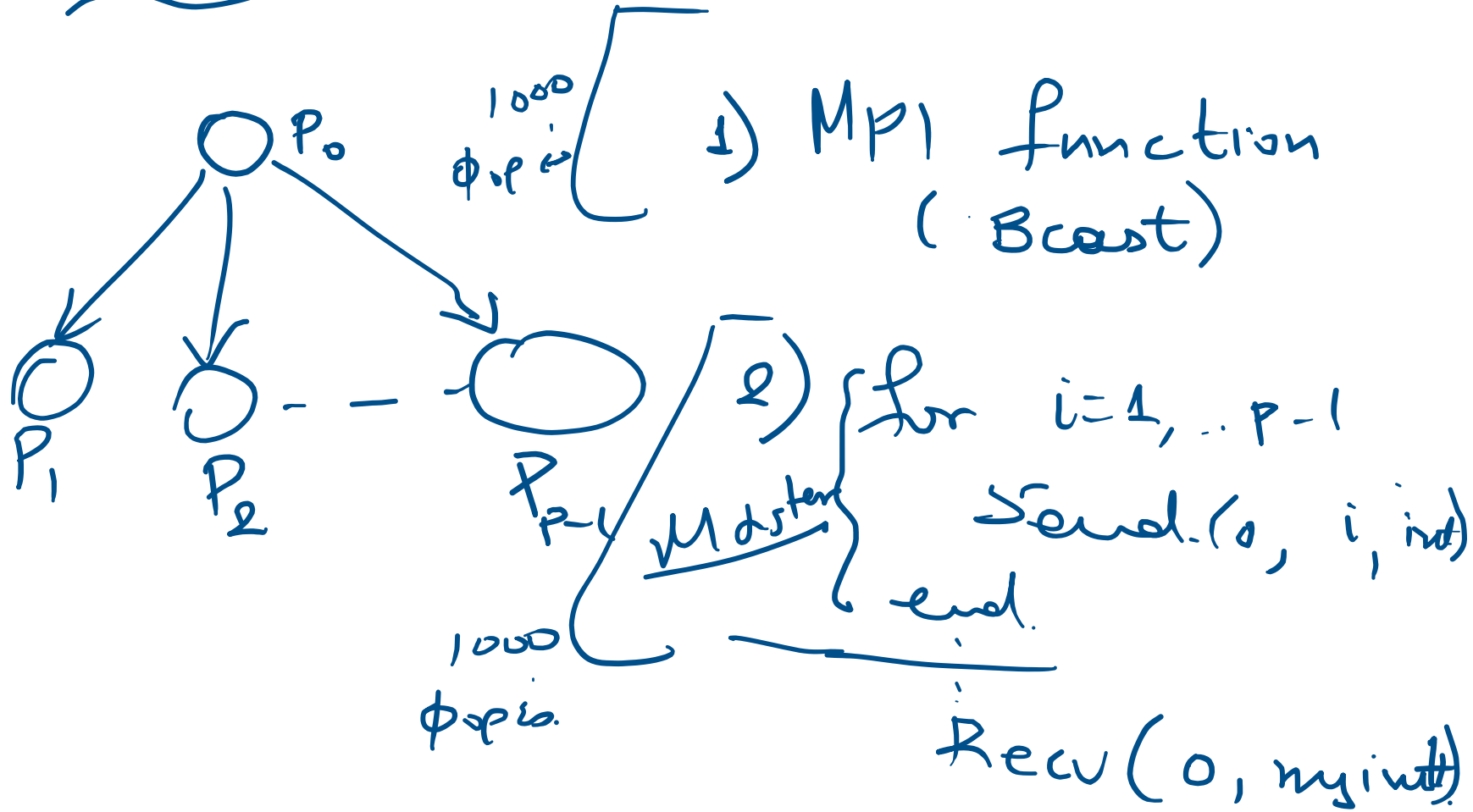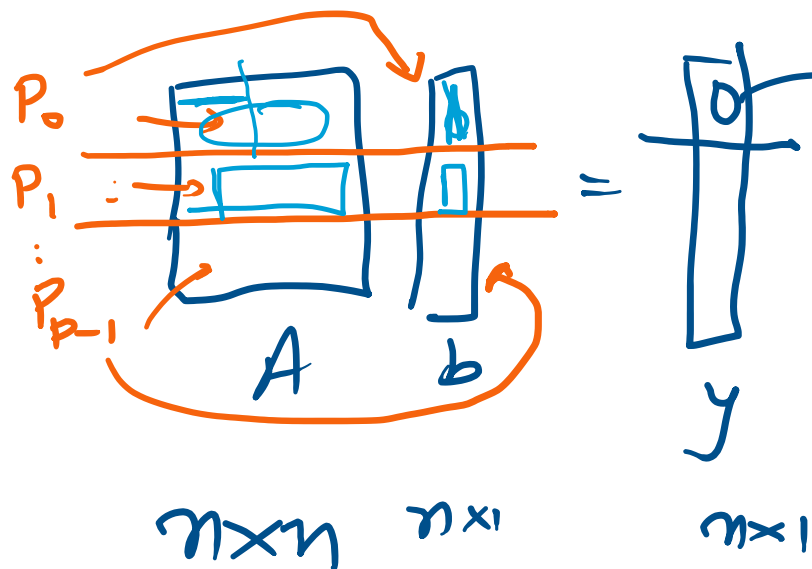
rowMVMult $(n, localA, localb, localy)$

Askitis-H 4

* Serial Sort.

* Parallel Sort

n

P tasks

P_0 P_1 — — — — · · · P_{P-1}

$n/p. \rightarrow$ serial Sort

P_0 P_1 P_2 P_{P-1}

1 iter   odd / even

2 iter   o / e

    o / e

P iter
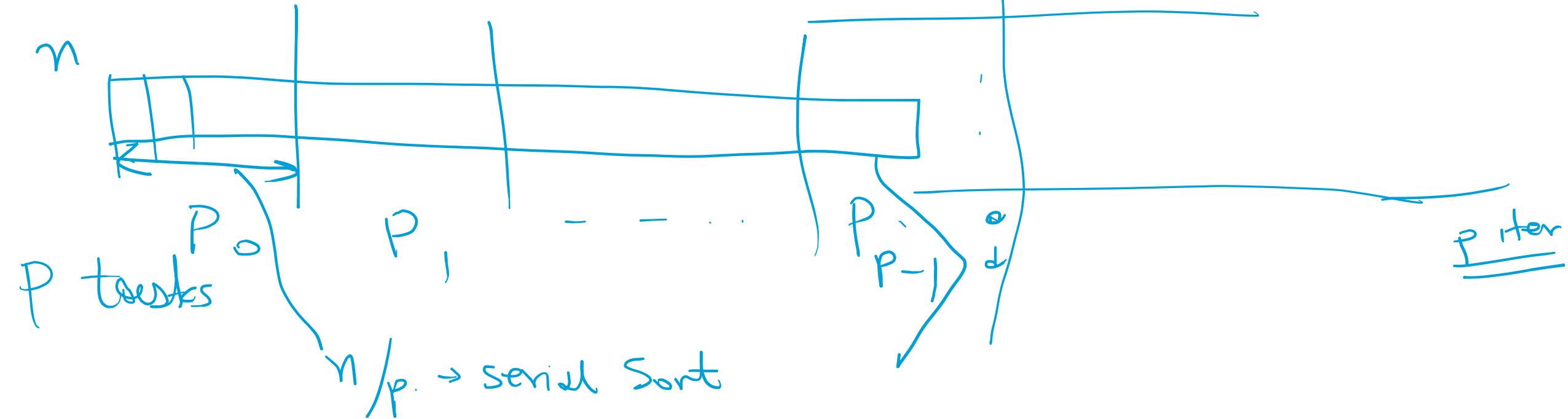
odd phase

$P_0 \Leftrightarrow P_1$

$P_2 \Leftrightarrow P_3$

$P_4 \Leftrightarrow P_5$

$P_{2k} \Leftrightarrow P_{2k+1}$

$k = 0, 1 \ldots, \frac{P}{2}$

?

even phase

$P_1 \Leftrightarrow P_2$

$P_3 \Leftrightarrow P_4$

$P_5 \Leftrightarrow P_6$

$\vdots$

$P_{2k+1} \Leftrightarrow P_{2k+2}$

$k = 0, 1, \ldots$?

Compare_exchange

sorted
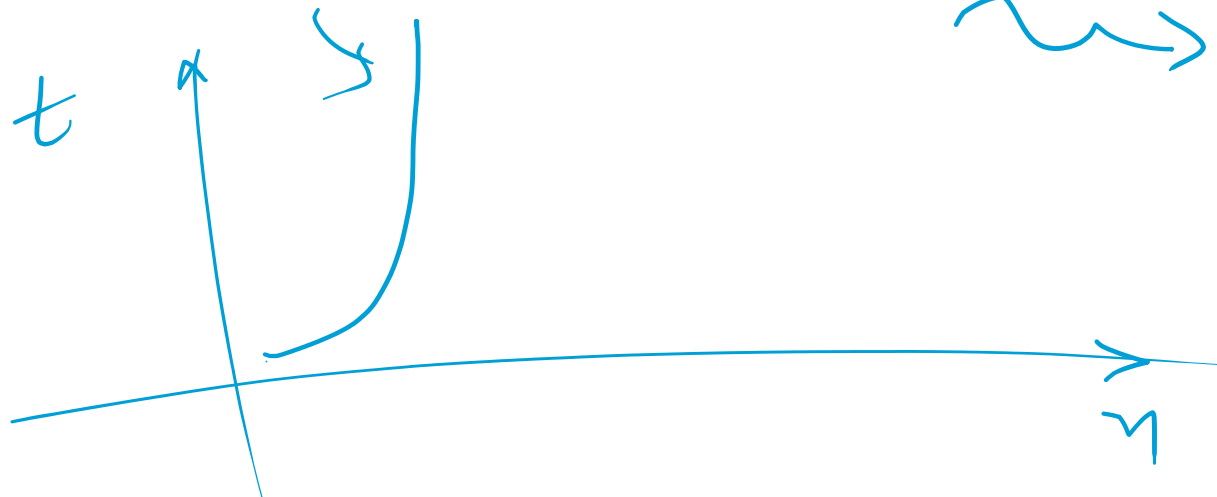
merged

P_{small} P_{large}

$$T_{ser} = \Theta(n^2) = Cn^2$$

$$\log T_{ser} = \log C + \underline{2 \log n}$$

$$T_{par} = \Theta\left(\left(\frac{n}{p}\right)^2\right) + Cnk + \underset{?}{\underbrace{\cdots}} = ?$$