

## Frequently used formulas and tables

Some of the following formulas and tables may be useful in solving some of the exercises.

### Schedulability Analysis (Extended)

$$\forall i = 1, \dots, n \quad \sum_{h:P_h > P_i} \frac{C_h}{T_h} + \frac{C_i + B_i}{T_i} \leq i(2^{1/i} - 1)$$

$$\forall i = 1, \dots, n \quad \prod_{h:P_h > P_i} \left( \frac{C_h}{T_h} + 1 \right) \left( \frac{C_i + B_i}{T_i} + 1 \right) \leq 2$$

$$\forall i = 1, \dots, n \quad \sum_{h:P_h > P_i} \frac{C_h}{T_h} + \frac{C_i + B_i}{T_i} \leq 1$$

### Response Time Analysis (Extended)

$$\begin{cases} R_i^{(0)} &= C_i + B_i + \sum_{k=1}^{i-1} C_k \\ R_i^{(s)} &= C_i + B_i + I_i^{(s-1)} = C_i + B_i + \sum_{k=1}^{i-1} \left\lceil \frac{R_i^{(s-1)}}{T_k} \right\rceil C_k \end{cases}$$

### Processor Demand Test

$$g(0, L) = \sum_{i=1}^n \left\lceil \frac{L - D_i + T_i}{T_i} \right\rceil C_i$$

$$L^* = \frac{1}{1 - U} \sum_{i=1}^n (T_i - D_i) U_i$$

### Tables

$n$	$n(2^{1/n} - 1)$
1	1.000
2	0.828
3	0.780
4	0.757
5	0.743
6	0.735
7	0.729
8	0.724
9	0.721
10	0.718