$$\begin{matrix} a \le c \\ b \le d \end{matrix} \longrightarrow a+b \le c+d$$

Luego es claro que:

$$a+b-1 \le c+d-1$$

$$\max\{0, a+b-1\} \le \max\{0, c+d-1\}$$

Así: $\underline{T(a,b) \le T(c,d)}$ ✓

- $T(a,b) = T(b,a)$.

Observar que:

$$T(a,b) = \max\{0, a+b-1\}$$

$$= \max\{0, b+a-1\} = T(b,a)$$ ✓

- $T(T(a,b), c) = T(a, T(b,c))$

Supongase que $\underline{a+b-1<0}$ y $\underline{b+c-1<0}$. Luego

$$T(T(a,b), c) = \max\{0, \max\{0, a+b-1\}+c-1\}$$

$$= \max\{0, 0+c-1\} = \max\{0, c-1\}$$

Como $c<1 \longrightarrow$ $= 0 = \max\{0, a-1\}$

$$= \max\{0, a+0-1\}$$

$$= \max\{0, a+\max\{0, b+c-1\}-1\}$$

$$= \underline{T(a, T(b,c))}$$ ✓ c.q.d.