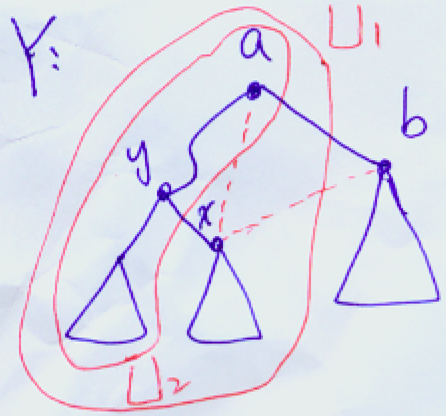

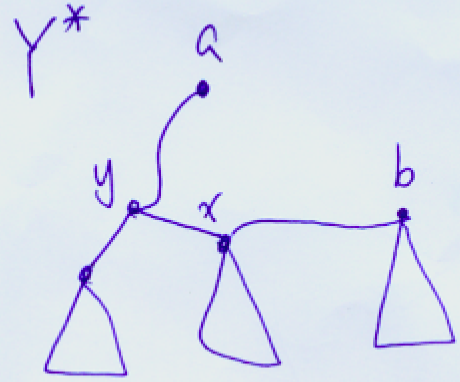

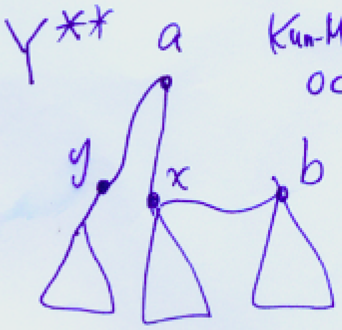

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$U_1 = V(T_a) - V(T_b)$

$U_2 = V(T_a) - V(T_b) - V(T_x)$ $\quad C(Y^*) > C(Y) \Rightarrow$

$$\left(C(Y^*) - C(Y)\right)/2 = \sum_{u \in U_1} \sum_{v \in V(T_b)} \left(d_Y(u,x) - d_Y(u,a) - \overline{w}(a,x)\right) > 0$$

$$\Rightarrow \sum_{u \in U_1} \left(d_Y(u,x) - d_Y(u,a)\right) > |U_1| \cdot \overline{w}(a,x)$$

$$\Rightarrow \sum_{u \in U_2} \left(d_Y(u,x) - d_Y(u,a)\right) > |U_1|\, \overline{w}(a,x)$$

$$\left(C(Y^{**}) - C(Y)\right)/2 = \sum_{u \in U_2} \sum_{v \in V(T_x)} \left(d_Y(u,a) + \overline{w}(a,x) - d_Y(u,x)\right)$$

$$+ \sum_{u \in V(T_x)} \sum_{v \in V(T_b)} \underbrace{\left(d_Y(u,x) - d_Y(u,a) - \overline{w}(a,x)\right)}_{\leq 0}$$

$$< 0$$

Note:
If Y is an MRCT of $\overline{G}$, then $C(Y^*) \not> C(Y)$, for otherwise we have $C(Y^{**}) < C(Y)$. In this case, we conclude that $C(Y^*) = C(Y)$.