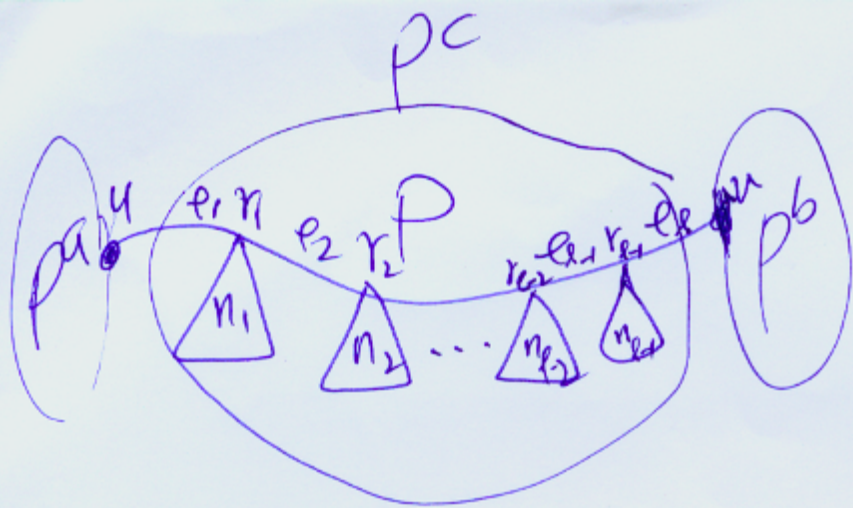


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$$C(X) \left(\text{Diagram} \right) \geq 2(1-\delta)n \sum d_T(q, P) + 2(p^a + p^c) \cdot p^b w(p) + (p^a - p^b) \cdot \sum_{j=1}^{l-1} n_j d_T(u, r_j)$$

$$C(X) \left(\text{Diagram} \right) \leq 2(p^a + p^c) \cdot p^b w(p) + n \sum d_T(q, P) + n \sum_{j=1}^{l-1} n_j d_T(u, r_j)$$

$$C(X') \left(\text{Diagram} \right) \leq 2(p^b + p^c) p^a w(p) + n \sum d_T(q, P) + n p^c w(p) - n \sum_{j=1}^{l-1} n_j d_T(u, r_j)$$

p^a	p^b	p^c	$\sum d_T(q, P)$	$w(p)$	$\sum_{j=1}^{l-1} n_j d_T(u, r_j)$
$(1-\frac{3}{2})\delta n$	δn	$\frac{\delta}{2}n$	\downarrow	\downarrow	\downarrow
$\frac{C(X')}{C(X)} \leq \max \left\{ \frac{1}{1-\delta}, 1, \frac{n}{(1-\frac{3}{2})\delta n - \delta n} \right\} = \frac{1}{1-\frac{5}{2}\delta}$					
$\frac{n}{2}$	$\frac{n}{2} - \frac{\delta}{2}n$	$\frac{\delta}{2}n$	$n \sum_{j=1}^{l-1} n_j d_T(u, r_j) \leq n \cdot p^c w(p) = \frac{\delta}{2}n^2 w(p)$		
$\frac{C(X')}{C(X)} \leq \max \left\{ \frac{1}{1-\delta}, 1 + \frac{\frac{\delta}{2}n^2}{(\frac{n}{2} + \frac{\delta}{2}n)(\frac{n}{2} - \frac{\delta}{2}n)} \right\}$					
$1 + \frac{\frac{\delta}{2}n^2}{\frac{n^2}{4} - \frac{\delta^2 n^2}{4}} \approx 1 + 2\delta$					