1. Let $A \subset V$ and $x \in V \setminus A$. Then show that

$$\frac{1}{\mu_x \mathrm{R}_{\mathrm{eff}}(x, A)} - \mathbb{P}^x(T_x^+ - T_A = \infty) \leq \mathbb{P}^x(T_x^+ > T_A) \leq \frac{1}{\mu_x \mathrm{R}_{\mathrm{eff}}(x, A)}$$

2. Let (Γ, μ) be a weighted graphs with $\mu(V) < \infty$. Then show that

$$\mathbb{E}^{x_0}(T_{x_1}) + \mathbb{E}^{x_1}(T_{x_0}) = \mathrm{R}_{\mathrm{eff}}(x_0, x_1)\mu(V).$$

3. Let (Γ, μ) be a weighted graph. Then Show that $\mathrm{R}_{\mathrm{eff}}(\cdot, \cdot)$ is a metric on V

4. Show that the Binary tree $\mathbb{T}^2$ satisfies (I_∞) with $C_0 = 3$.

5. Let Γ_i for $i = 1, 2$ be graphs, with natural weights, which satisfy (I_{α_i}) respectively. Show that the join of Γ_1 and Γ_2 satisfies $(I_{\alpha_1 \wedge \alpha_2})$