$$\Gamma = \sqrt{\gamma}\left(\frac{2}{\gamma+1}\right)^{\frac{\gamma+1}{2(\gamma-1)}} = \sqrt{1.4}\left(\frac{2}{2.4}\right)^{\frac{2.4}{2\times 0.4}} = \sqrt{1.4}\left(\frac{2}{2.4}\right)^{3}$$

$$\therefore \Gamma = \sqrt{1.4} \times 0.5787 = 0.6847$$

also

note: $\tau_{\lambda_{AB}} = \tau_\lambda$ throughout.

$$T_{t_8} = \frac{T_{t_8}}{T_{t_7}}\frac{T_{t_7}}{T_0} T_0 = \tau_{\lambda_{AB}} T_0$$

$$T_{t_8} = 6.72 \times 223.26\,K = 1500\,K \quad (\text{ideally})$$

$$P_{t_8} = \frac{P_{t_8}}{P_{t_7}} \cdots \frac{P_{t_0}}{P_0} P_0 = \pi_r P_0$$

$$P_{t_8} = \tau_r^{\frac{\gamma}{\gamma-1}} P_0$$

$$P_{t_8} = (2.8)^{\frac{1.4}{0.4}} \times 26{,}495.9\ \frac{N}{m^2} = 973{,}266.5\ \frac{N}{m^2}$$

$$P_0 = \rho_0 R T_0 = 0.41351\ \frac{kg}{m^3}\ 287\ \frac{Nm}{kg\,K}\ 223.26\,K$$

$$P_0 = 26{,}495.9\ \frac{N}{m^2}\ (= P_a)$$