1. When the afterburner is turned off, the temperature downstream of the afterburner is the temp coming out of the turbine i.e.

\[ T_{\text{lab}} = T_2 \Gamma_t \]

For turbojet with afterburner

\[ \frac{F}{m} = a_o \left\{ \left[ \frac{2}{v-1} \frac{T_a}{\Gamma_c} \left( \frac{\Gamma_c T_c}{\Gamma_t} - 1 \right) \right]^{\frac{1}{2}} - M_0 \right\} \]

\[ \frac{F}{m} = a_o \left\{ \left[ \frac{2}{v-1} \frac{T_a}{\Gamma_c} \left( \frac{\Gamma_c T_c}{\Gamma_t} - 1 \right) \right]^{\frac{1}{2}} - M_0 \right\} \]

eqns for \( \Gamma_t, \Gamma_c, \Gamma_q, \) etc. are unchanged

\[ \Gamma_t = 1 - \frac{\Gamma_t}{\Gamma_a} (\Gamma_c - 1) \]

\[ \frac{F}{m} = a_o \left\{ \left[ \frac{2}{v-1} \left( \frac{\Gamma_a}{\Gamma_t} \Gamma_t - \frac{T_a}{\Gamma_c} \right) \right]^{\frac{1}{2}} - M_0 \right\} \]

\[ \frac{F}{m} = a_o \left\{ \left[ \frac{2}{v-1} \left( \frac{\Gamma_a}{\Gamma_t} - \frac{T_a}{\Gamma_c} (\Gamma_c - 1) - \frac{T_a}{\Gamma_c^2} \right) \right]^{\frac{1}{2}} - M_0 \right\} \]

add and subtract \( \frac{T_a}{\Gamma_c} M_0^2 = \frac{T_a}{\Gamma_c} \frac{2}{v-1} (\Gamma_t - 1) \)