Condensational growth of cloud droplet - different approach

Starting with the "Western" formula we have:

$$\frac{dr}{dt} = \frac{A \cdot (S-1)}{r} \tag{1}$$

where $S = e/e_s \cong q_v/q_s$ and

$$A = \left[\frac{\rho_w \cdot R_v \cdot T}{e_s \cdot D} + \frac{\rho_w L}{K \cdot T}\left(\frac{L}{R_v \cdot T} - 1\right)\right]^{-1} \tag{2}$$

This is like in most textbooks.
First we work on the right term. The "-1" in this term is very small compared to $L/(R_v \cdot T)$, about 5% (**show that it is OK**), so we can safely neglect this. Then we have:

$$A = \left(\frac{\rho_w \cdot R_v \cdot T}{e_s \cdot D} + \frac{\rho_w \cdot L^2}{K \cdot R_v \cdot T^2}\right)^{-1} \tag{3}$$

Using the Clausius-Clapeyron relation we can approximate $L/(R_v \cdot T^2) \cong \partial q_s/\partial T \cdot (1/q_s)$. Then we can approximate $K \cong D \cdot c_p \cdot \rho_a$ which is reasonable (accurate to about 10-15 %) under normal atmospheric conditions, ρ_a here is the air density. This then gives

$$A = \left(\frac{\rho_w \cdot R_v \cdot T}{e_s \cdot D} + \frac{\partial q_s}{\partial T}\frac{1}{q_s}\frac{L \cdot \rho_w}{D \cdot c_p \cdot \rho_a}\right)^{-1} \tag{4}$$

Now we work on the left term. We can approximate $q_s = \epsilon \cdot e_s/(p - e_s) \cong \epsilon \cdot e_s/p$ since $p >> es$ for almost all conditions. Then we can use $\epsilon = R_d/R_v$ and $\rho_a = p/(R_d \cdot T)$ from the ideal gas law. This gives

$$A = \left(\frac{\rho_w}{q_s \cdot \rho \cdot D} + \frac{\partial q_s}{\partial T}\frac{1}{q_s}\frac{L \cdot \rho_w}{D \cdot c_p \cdot \rho_a}\right)^{-1} \tag{5}$$

OR

$$A = \frac{q_s \rho_a D}{\rho_w \left(1 + \frac{L}{c_p}\frac{\partial q_s}{\partial T}\right)} \tag{6}$$

Show that formula (2) and (6)-(7) give similar results and that approximation that have been made have a small effect (order 10 % or less).