Now defining: $\varphi_1 = \sqrt{\mu^2+2\alpha}$ and evaluating (6)

$$\frac{\log\left[\dfrac{\dfrac{B-(-\mu+\varphi_1)}{\alpha}}{\dfrac{\mu+\varphi_1}{\alpha}+B}\right]}{\dfrac{2\varphi_1}{\alpha}} - \frac{\log\left[\dfrac{0+\dfrac{\mu-\varphi_1}{\alpha}}{\dfrac{\mu+\varphi_1}{\alpha}+0}\right]}{\dfrac{2\varphi_1}{\alpha}} = \frac{\alpha}{2}(t-T) \qquad / \cdot \frac{2\varphi_1}{\alpha}$$

and rearranging

$$\log\left[\frac{\alpha B+\mu-\varphi_1}{\alpha B+\mu+\varphi_1}\right] - \log\left[\frac{\mu-\varphi_1}{\mu+\varphi_1}\right] = \varphi_1(t-T)$$

$$\log\left[\frac{(\alpha B+\mu-\varphi_1)}{(\alpha B+\mu+\varphi_1)}\cdot\frac{(\mu+\varphi_1)}{(\mu-\varphi_1)}\right] = \varphi_1(t-T) \qquad / e^{(\,)}$$

$$\frac{\alpha B+\mu-\varphi_1}{\alpha B+\mu+\varphi_1} = \underbrace{\frac{(\mu-\varphi_1)}{(\mu+\varphi_1)}\cdot e^{\varphi_1(t-T)}}_{\text{let's define this as } H}$$

then: $\alpha B+\mu-\varphi_1 = (\alpha B+\mu+\varphi_1)\cdot H$

So:

$$\alpha B(1-H) = \varphi_1-\mu+H\cdot(\mu+\varphi_1) \qquad /\text{Replacing } H \text{ on the right side}$$

$$\alpha B(1-H) = \varphi_1-\mu+(\mu-\varphi_1)\left(e^{\varphi_1(t-T)}\right)$$

$$\alpha B(1-H) = \left(1-e^{\varphi_1(t-T)}\right)\cdot(\varphi_1-\mu)$$

$$B = \frac{\left(1-e^{\varphi_1(t-T)}\right)(\varphi_1-\mu)}{\alpha(1-H)} = \frac{\left(1-e^{\varphi_1(t-T)}\right)(\varphi_1-\mu)}{\alpha\left(1-\dfrac{(\mu-\varphi_1)}{(\mu+\varphi_1)}e^{\varphi_1(t-T)}\right)}$$

$$= \frac{\left(1-e^{\varphi_1(t-T)}\right)(\varphi_1-\mu)}{\dfrac{\alpha\left(\mu+\varphi_1-(\mu-\varphi_1)e^{\varphi_1(t-T)}\right)}{\mu+\varphi_1}}$$