$$f(y) = (\lambda_0 + \lambda_1 y)\, e^{\left(-\lambda_0 y - \frac{1}{2}\lambda_1 y^2\right)}$$

$$S(t) = P(T > t) = \int_t^\infty (\lambda_0 + \lambda_1 y)\, e^{\left(-\lambda_0 y - \frac{1}{2}\lambda_1 y^2\right)} dy$$

$$= \lim_{b \to \infty} \left[-e^{-\frac{(\lambda_1 y^2)}{2} - \lambda_0 y} \right]_t^b$$

$$= \lim_{b \to \infty} \left[-e^{\frac{-\lambda_1 b^2}{2} - \lambda_0 b} \right] + e^{\frac{-\lambda_1 t^2}{2} - \lambda_0 t}$$

$$= \lim_{b \to \infty} \left[\left(-e^{\frac{-\lambda_1 b^2}{2} - \lambda_0 b} \right) \right] + e^{\frac{-\lambda_1 t^2}{2} - \lambda_0 t}$$

$\to 0$

if: $\lambda_1 \in \mathbb{R}$, $\lambda_0 > 0$

$$S(t) = e^{\frac{-\lambda_1 t^2}{2} - \lambda_0 t}, \quad \lambda_1 \in \mathbb{R} \wedge \lambda_0 > 0$$

$$h(t) = \frac{f(t)}{S(t)} = \frac{(\lambda_0 + \lambda_1 t)\, \cancel{e^{\left(-\lambda_0 t - \frac{1}{2}\lambda_1 t^2\right)}}}{\cancel{e^{\frac{-\lambda_1 t}{2} - \lambda_0 t}}} = \lambda_0 + \lambda_1 t$$

$$h(t) = \lambda_0 + \lambda_1 t$$

$$H(t) = -\log(S(t))$$

$$= -\log\left(e^{\frac{-\lambda_1 t^2}{2} - \lambda_0 t}\right)$$

$$= -\left(-\frac{\lambda_1 t^2}{2} - \lambda_0 t\right)$$

$$H(t) = \frac{\lambda_1 t^2}{2} + \lambda_0 t$$