$$\partial_1 \alpha = \frac{1}{2r}\left(e^{-2\alpha} - 1\right) \quad -(1)$$

$$\partial_1(\partial_1\alpha) = -\frac{1}{2r^2}\left(e^{-2\alpha} - 1\right) - \frac{1}{r}(\partial_1\alpha)\, e^{-2\alpha} \quad -(2)$$

where $$e^{-2\alpha} = \frac{1}{1-x} \quad -(3)$$

$$\partial_1\alpha = \frac{x}{2r(1-x)} \quad -(4)$$

$$\partial_1(\partial_1\alpha) = -\frac{1}{2r^2}\left(\frac{1}{1-x} - 1\right) - \frac{x}{2r^2(1-x)^2}$$

$$= -\frac{1}{2r^2}\left(\left(\frac{x}{1-x}\right) + \frac{x}{(1-x)^2}\right)$$

$$R^0_{101} = -\frac{1}{2r^2}\left(\frac{x^2}{(1-x)^2}\right) + \frac{1}{2r^2}\left(\frac{x}{1-x} + \frac{x}{(1-x)^2}\right)$$

$$= -\frac{1}{2r^2}\left(\frac{x}{1-x}\right)\left(\frac{x}{1-x} - 1 - \frac{1}{1-x}\right)$$

$$= -\frac{1}{2r^2}\left(\frac{x}{1-x}\right)\left(\frac{x}{1-x} - \left(1 + \frac{1}{1-x}\right)\right)$$

$$= -\frac{1}{2r^2}\left(\frac{x}{1-x}\right)\left(\frac{x}{1-x} - \left(\frac{2-x}{1-x}\right)\right)$$

$$\boxed{R^0_{101} = \frac{1}{r^2}\,\frac{x}{1-x}.}$$

AGREEMENT