PROOF OF FORMULA 3.364.2

$$\int_{-1}^{1} \frac{e^{2x}\,dx}{\sqrt{1-x^2}} = \pi I_0(2)$$

The integral representation of the *imaginary Bessel function* is

$$I_\nu(z) = \frac{z^\nu}{\Gamma(\nu+\frac{1}{2})\Gamma(\frac{1}{2})2^\nu} \int_{-1}^{1} (1-t^2)^{\nu-1/2} e^{\pm zt}\,dt.$$

The choice $\nu = 0$ and $z = 2$ gives the result.