PROOF OF FORMULA 4.271.9

$$\int_0^\infty \frac{(\ln x)^{2n}\,dx}{1-x^2} = 0$$

Write

$$\int_0^\infty \frac{(\ln x)^{2n}\,dx}{1-x^2} = \int_0^1 \frac{(\ln x)^{2n}\,dx}{1-x^2} + \int_1^\infty \frac{(\ln x)^{2n}\,dx}{1-x^2}.$$

Now let $t = 1/x$ in the second integral to obtain the negative of the first one.