FORMULA 3.419.5

$$\int_{-\infty}^{\infty} \frac{x^4\,dx}{(\beta+e^x)(1-e^{-x})} = \frac{\left(\pi^2+\ln^2\beta\right)\left(7\pi^2+3\ln^2\beta\right)\ln\beta}{15(\beta+1)}$$