

FORMULA 3.411.15

$$\int_0^{\infty} \frac{x^2 e^{-nx}}{1 + e^{-x}} dx = 2 \sum_{k=n}^{\infty} \frac{(-1)^{n+k}}{k^3} = (-1)^{n+1} \left(\frac{3}{2} \zeta(3) + 2 \sum_{k=1}^{n-1} \frac{(-1)^k}{k^3} \right)$$