NEW FORMULA 3.555.1

The original formula is

$$\int_0^\infty \frac{\sinh^2 ax}{1-e^{px}} \cdot \frac{dx}{x} = \frac{1}{4} \ln \left(\frac{p}{2a\pi} \, \sin \frac{2a\pi}{p} \right)$$

The change of variables $t = px$ and replacing a/p by a gives the new form (where we have replaced t by x to be consistent with the table and rewrite the integrand so it is positive)

$$\int_0^\infty \frac{\sinh^2 ax}{e^x - 1} \cdot \frac{dx}{x} = \frac{1}{4} \ln \left(\frac{2\pi a}{\sin 2\pi a} \right)$$