

NEW FORMULA 3.511.3

The original formula is

$$\int_0^{\infty} \frac{\sinh ax}{\cosh bx} dx = \frac{\pi}{2b} \sec\left(\frac{\pi a}{2b}\right) - \frac{1}{b} \beta\left(\frac{a+b}{2b}\right)$$

The change of variables $t = bx$ and replacing a/b by a gives the new formula (going back to x as the integration variable)

$$\int_0^{\infty} \frac{\sinh ax}{\cosh x} dx = \frac{\pi}{2} \sec\left(\frac{\pi a}{2}\right) - \beta\left(\frac{a+1}{2}\right)$$