

FORMULA 4.132.1

$$\int_0^{\infty} \frac{\sin ax \sinh \beta x}{e^{\gamma x} - 1} dx = -\frac{a}{2(a^2 + \beta^2)} + \frac{\pi}{2\gamma} \frac{\sinh \frac{2\pi a}{\gamma}}{\cosh \frac{2\pi a}{\gamma} - \cos \frac{2\pi \beta}{\gamma}} + \frac{i}{2\gamma} \left[\psi \left(\frac{\beta}{\gamma} + i \frac{a}{\gamma} + 1 \right) - \psi \left(\frac{\beta}{\gamma} - i \frac{a}{\gamma} + 1 \right) \right]$$