

PROOF OF FORMULA 3.522.8

$$\int_0^{\infty} \frac{dx}{(1+x^2) \cosh \frac{\pi x}{2}} = \ln 2$$

This is the special case $a = \pi/2$ and $b = 1$ of entry 3.522.3. Therefore

$$\int_0^{\infty} \frac{dx}{(1+x^2) \cosh \pi x} = \sum_{k=1}^{\infty} \frac{(-1)^{k-1}}{k} = \ln 2.$$

This is the result.