

Answer on Question #52553 – Math – Calculus

Obtain the function whose Fourier Sine transform is e^{-as}/s

Solution

It is known from mathematical tables that Fourier Sine transform for $\arctan\left(\frac{t}{a}\right)$ is given by

$$\int_{-\infty}^{\infty} \arctan\left(\frac{t}{a}\right) \sin \frac{2\pi st}{a} dt = \frac{\pi e^{-as}}{2s}.$$

So Fourier Sine transform for $\frac{2}{\pi} \arctan\left(\frac{t}{a}\right)$ is $\frac{e^{-as}}{s}$.