



17.
$$\int_0^{\infty} \sin(xt)y(t) dt = f(x).$$

Solution:
$$y(x) = \frac{2}{\pi} \int_0^{\infty} \sin(xt)f(t) dt.$$

Up to constant factors, the function $f(x)$ and the solution $y(t)$ are the [Fourier sine transform](#) pair.

References

- Bateman, H. and Erdélyi, A.,** *Tables of Integral Transforms. Vol. 1*, McGraw-Hill Book Co., New York, 1954.
Ditkin, V. A. and Prudnikov, A. P., *Integral Transforms and Operational Calculus*, Pergamon Press, New York, 1965.
Polyanin, A. D. and Manzhirov, A. V., *Handbook of Integral Equations*, CRC Press, Boca Raton, 1998.