

5. $y(x) + \lambda \int_0^\infty e^{-|x-t|} y(t) dt = f(x)$.

Solution for $\lambda > -\frac{1}{2}$:

$$\begin{split} y(x) &= f(x) - \frac{\lambda}{\sqrt{1+2\lambda}} \int_0^\infty \exp\left(-\sqrt{1+2\lambda}\,|x-t|\right) f(t)\,dt \\ &+ \left(1 - \frac{\lambda+1}{\sqrt{1+2\lambda}}\right) \int_0^\infty \exp\left[-\sqrt{1+2\lambda}\,(x+t)\right] f(t)\,dt. \end{split}$$

References

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