In this article we deal with summation formulas for the series \( \sum_{n=1}^{\infty} \frac{J_{\mu}(nx)}{n^{\nu}} \), referring partly to some results from our paper in J. Math. Anal. Appl. 247 (2000) 15 – 26. We show how these formulas arise from different representations of Bessel functions. In other words, we first apply Poisson’s or Bessel’s integral, then in the sequel we define a function by means of the power series representation of Bessel functions and make use of Poisson’s formula. Also, closed form cases as well as those when it is necessary to take the limit have been thoroughly analyzed.