Notes on Fourier series and Integrals (Dym and McKean, 1972)

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# The Lebesgue Integral

The Lebesgue integral is a generalization of the Riemann’s notion of integral.

Let us consider a positive-continuous function defined on an interval .

To form a Riemann sum we subdivide the interval with the following points of subdivision:

form the Riemann sum

in which is any point between and . It can be verified that this sum approaches the limit – the Riemann integral

as and the biggest of the lengths () tends to 0.

In the Lebesgue integral definition we subdivide/quantize the range of the function instead of the domain.

Lebesgue’s technique subdivides the vertical axis by a series of points

# References

[1] [Fourier Series and Integrals, H. Dym, HP McKean, 1972](https://github.com/dimitarpg13/spectral_analysis/blob/main/literature/books/fourier_series_and_integrals_dym_mckean_1972.pdf)