

Examples of counterexamples: a book conspectus*

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A counterexample is any exception to a generalization. Counterexamples are often used in science (and philosophy), as a means to setting boundaries. In mathematics at large, well-chosen counterexamples may bound possible theorems, disprove certain conjectures. This conspectus is (mostly) meant to gather and share counterexample book references (on algebra, analysis, calculus, logic, philosophy, probability, statistics, topology). It is available at: 10.5281/zenodo.14740765.

Keywords— Beispiel, contradiction, contre-exemple, counterexample, example, exemple, Gegenbeispiel, mathematics, Mathematik, mathématiques, refutation, réfutation

1 Impetus, motivation, credits

X (ex-Twitter) post “Examples of books on counterexamples”¹ (May 25th, 2023) drew some interest and contributions. It was triggered by Shen Comix’s cartoon in Figure 1, referring to Borwein–Borwein integrals: a series of sums of products of cardinal sines (sinc), whose eight-first terms share the same $\frac{\pi}{2}$ value, while the ninth term is subtly different [BB01].



Figure 1: Shen Comix: detecting patterns in series, referring to Borwein–Borwein sinc integrals.

Counterexamples are important in science — notably to invalidate arguments, conjectures, theories. This impetus motivated us to openly share this conspectus² of books (with the associated LATEXbib file) focused on counterexamples (with one exception), on algebra, (complex and real) analysis, calculus, control, differential equations, functional analysis, graph theory, logic, measure theory, operator theory, philosophy, probability, statistics, topology.

Publications on counterexamples are numerous (there exists for instance an “Examples and Counterexamples” journal³). This document will be amended when additional book-like references are available. Thanks to X users: @GrdCrf, @datagenproc, @latzplacian, @sjaak_bлом, @LGcommaI, @eremeticus.

Revision	Date	Author(s)	Description
v1.0.0	2025-01-14	Laurent Duval	First release
v1.0.1	2025-01-26	Laurent Duval	Posted to Zenodo. Added versioning. Obtained a DOI

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¹Tweet “Examples of books on counterexamples” x.com/laurentduval/status/1661725617891450880

²Inspired by musical work: Raison d’être, Conspectus, 1994.

³<https://www.sciencedirect.com/journal/examples-and-counterexamples/>

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