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Himmelblau's function

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In [mathematical optimization](#), **Himmelblau's function** is a multi-modal function, used to test the performance of [optimization algorithms](#). The function is defined by:

$$f(x, y) = (x^2 + y - 11)^2 + (x + y^2 - 7)^2.$$

It has one local maximum at $x = -0.270845$ and $y = -0.923039$ where $f(x, y) = 181.617$, and four identical local minima:

- $f(3.0, 2.0) = 0.0$,
- $f(-2.805118, 3.131312) = 0.0$,
- $f(-3.779310, -3.283186) = 0.0$,
- $f(3.584428, -1.848126) = 0.0$.

The locations of all the [minima](#) can be found analytically. However, because they are roots of [cubic polynomials](#), when written in terms of radicals, the expressions are somewhat complicated.^{[*[citation needed](#)*]}

The function is named after David Mautner Himmelblau (1924-2011), who introduced it.^[1]

See also [\[edit\]](#)

- [Test functions for optimization](#)

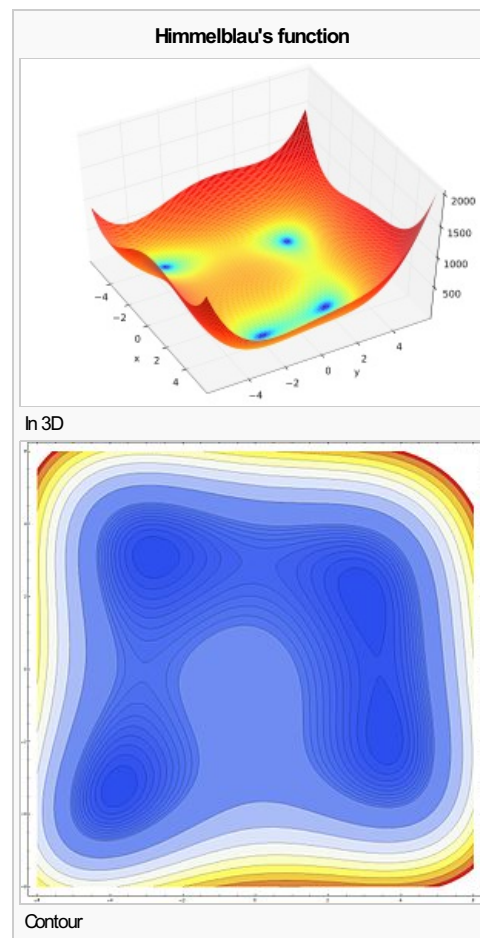
References [\[edit\]](#)

- ↑ Himmelblau, D., *Applied Nonlinear Programming*. McGraw-Hill (1972) ISBN 0-07-028921-2



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Categories: [Mathematical optimization](#) | [Mathematical analysis stubs](#)



This page was last modified on 25 November 2013 at 21:11.

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