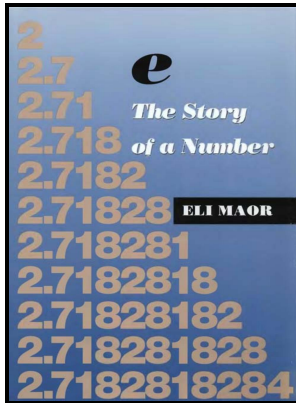


# Joseph Liouville, 1809-1882, master of pure and applied mathematics

Springer-Verlag - Liouville's theorem (complex analysis)



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Tags: #Liouville's #theorem #(complex #analysis)

## Liouville's theorem (complex analysis)

In , Liouville's theorem, named after , states that every must be. Liouville's theorem does not extend to the generalizations of complex numbers known as and.

## Liouville's theorem (complex analysis)

Integrating then shows that  $f$  is and then, by referring back to the original inequality, we have that the constant term is zero.

## Liouville's theorem (complex analysis)

Thus  $h$  can be extended to an entire bounded function which by Liouville's theorem implies it is constant. But the choice of  $r$  in the above is an arbitrary positive number. .

## Liouville's theorem (complex analysis)

This article is about Liouville's theorem in complex analysis. The theorem is considerably improved by , which says that every entire function whose image omits two or more complex numbers must be constant.

## Liouville's theorem (complex analysis)

Then the image of  $f$  is equal to  $fP$ .

## Liouville's theorem (complex analysis)

Since  $f$  is and  $P$  is ,  $fP$  is also compact and, therefore, it is bounded. Suppose  $f$  is bounded:  $i$



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