Die Fourier-Transformation

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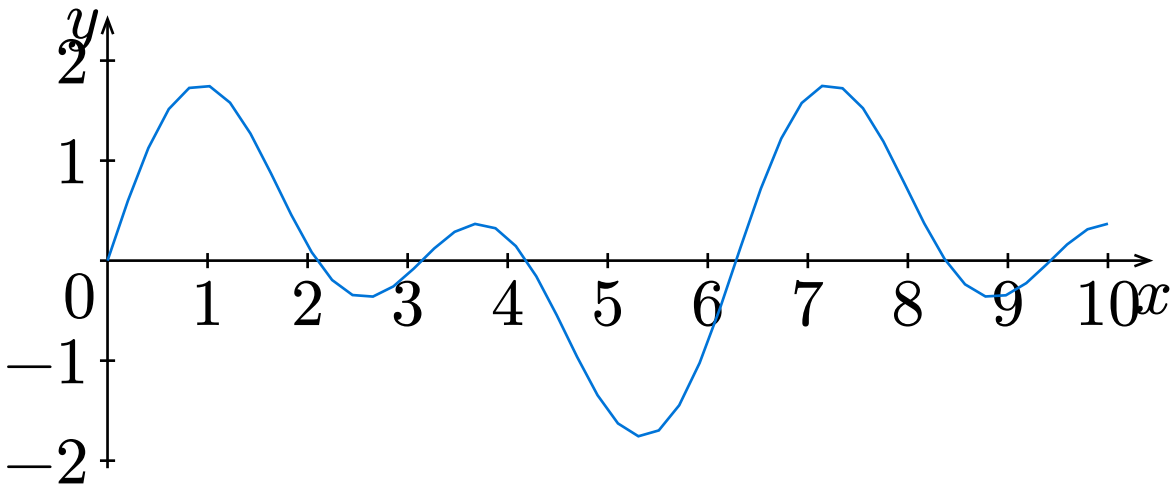
Was?

Aufwickeln von einem Signal auf einem Kreis. Bei den richtigen Windungsfrequenzen geht die $\hat{f}$-Funktion $\gg 0$.



$f : x \to \sin(x) + \sin(2x)$

Warum?

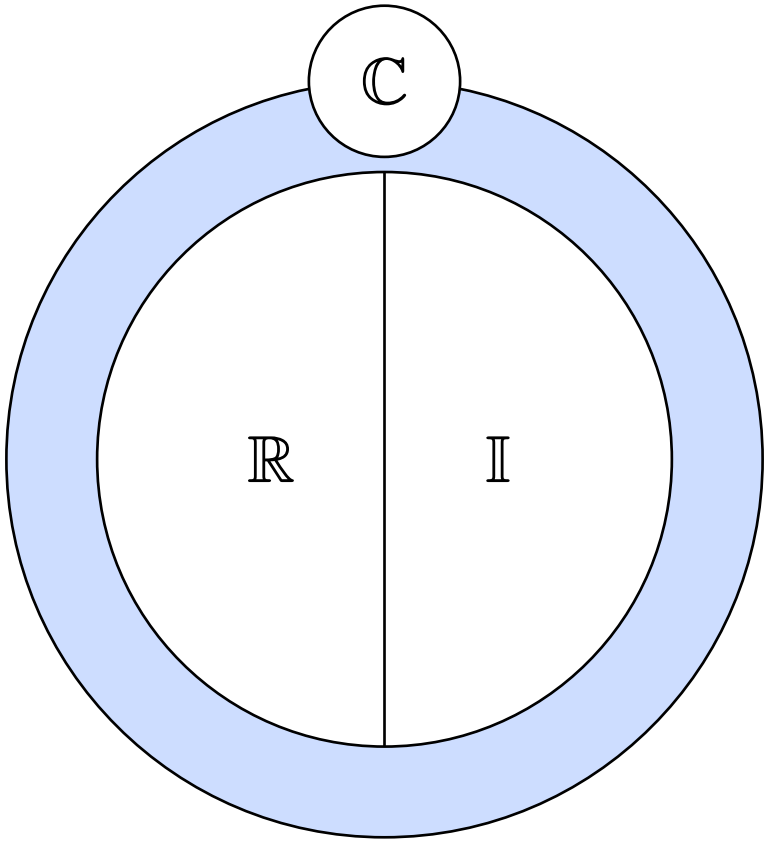
Fallbeispiel

Wie?

$$i = \sqrt{-1}$$

oder

$$x^2 + 1 = 0$$


ℂ
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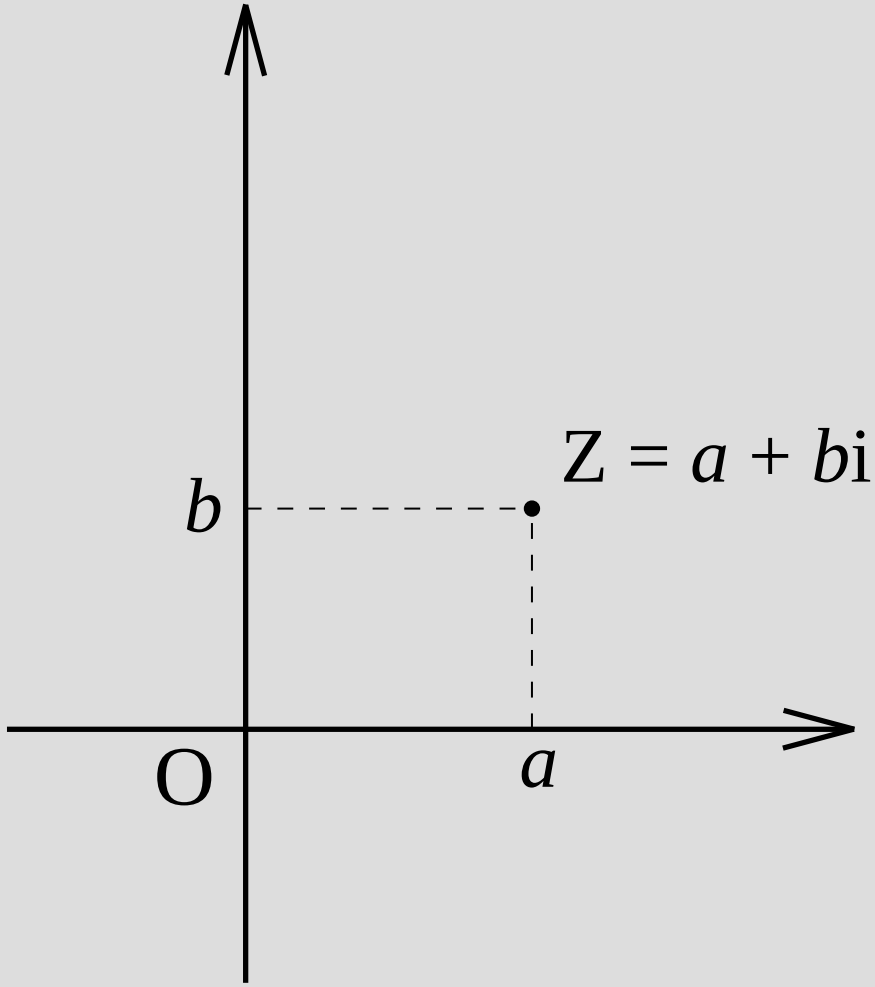
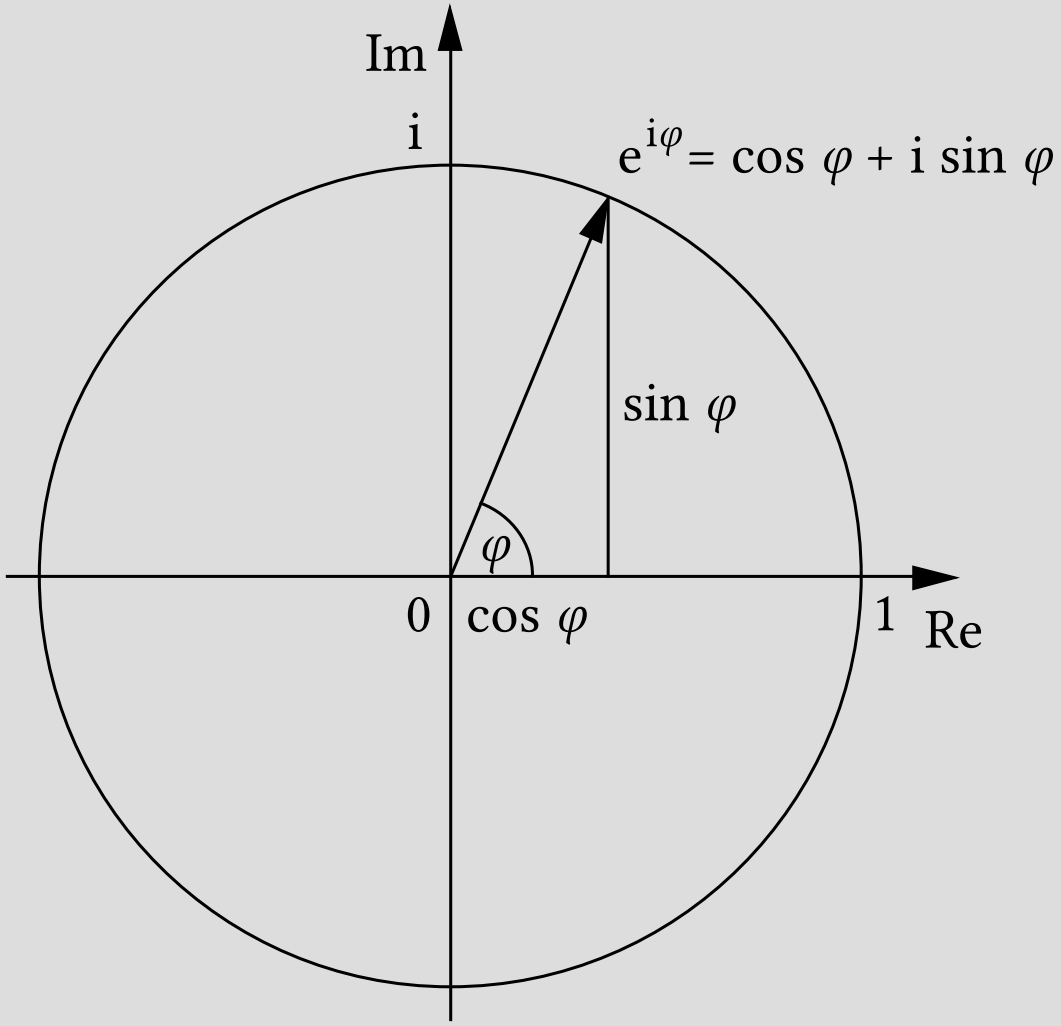

Z = a + bi
b
O
a

$$e^{i\varphi} = \cos\varphi + i\sin\varphi$$

$$\Downarrow$$

$$e^{i\pi} = -1 + 0i$$



Fourier-Transformation

$$\hat{f}(\xi) = \int_{-\infty}^{\infty} f(x) e^{-i2\pi\xi x} dx$$

Inverse Fourier-Transformation

$$f(x) = \int_{-\infty}^{\infty} f(\xi) e^{i2\pi\xi x} d\xi$$

Bibliographie

[1] „Euler's formula.svg“. [Online]. Verfügbar unter: https://commons.wikimedia.org/w/index.php?curid=821342