funkce v $\mathcal{S}$

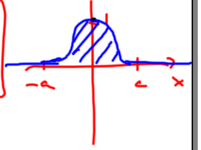
$$L(af+bg) = (af+bg)(x_0) = a f(x_0) + b g(x_0) \qquad a \in \mathbb{R},\ b \in \mathbb{R}$$

$$= aL(f) + bL(g)$$

$$\int_{-\infty}^{\infty} g(x)\,dx = C$$

$$\boxed{L(f) = \int_a^b f(x)\,\underbrace{g(x)}_{}\,dx}$$

vyjádření! vážený průměr



$$L(f+f') = \int_a^b (f+f')(x)\, g(x)\, dx$$

$$= \int_a^b f(x) g(x)\,dx + \int_a^b f'(x) g(x)\,dx = L(f) + L(f')$$

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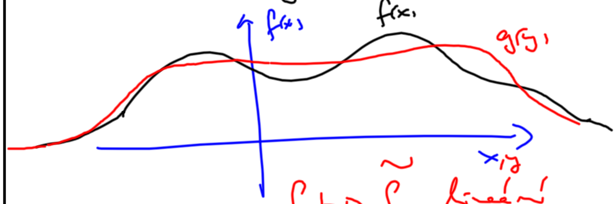
$\mathcal{S} = \{$ integrovatelné ... na $(-\infty,\infty)$ $\}$

$$\mathcal{S} \ni f \longmapsto L_y(f) = \int_{-\infty}^{\infty} f(x)\, g(y-x)\,dx = \tilde f(y)$$



$f \mapsto \tilde f$ lineární

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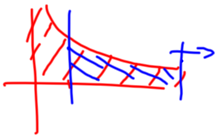
$$\int_1^{\infty} \frac{1}{x^2}\,dx = \lim_{t\to\infty} \int_1^t \frac{1}{x^2}\,dx = \left[-\frac{1}{x}\right]_1^t$$

$$= +1 - \frac{1}{t}$$

$$\to \underline{\underline{1}}$$



$$f, g \longmapsto f * g = \int_{-\infty}^{\infty} f(x)\, g(y-x)\,dx$$

$t = y - x$, $dt = -dx$

$$= -\int_{\infty}^{-\infty} f(y-t)\, g(t)\,dt$$

$$= \int_{-\infty}^{\infty} g(t)\, f(y-t)\,dt = g * f$$

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$$\mathcal{F}(f)(\omega) = \tilde f(\omega) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} f(t)\, e^{-i\omega t}\,dt$$

Fourierova transformace

$$\left.\begin{aligned} a_n &= \frac{1}{2\pi}\int_{-\infty}^{\infty} f(x)\cos nx\,dx \\ b_n &= \frac{1}{2\pi}\int_{-\infty}^{\infty} f(x)\sin nx\,dx \end{aligned}\right\} \text{koef. ve Four. ř.}$$

$$\boxed{c_n = \frac{1}{T}\int_{-T/2}^{T/2} f(t)\, e^{-i\omega n t}\,dt}$$

$$f(t) = \sum_{n=-\infty}^{\infty} c_n e^{i\omega n t}$$

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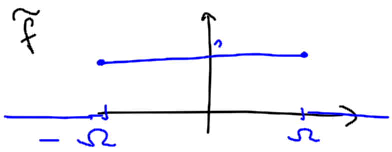
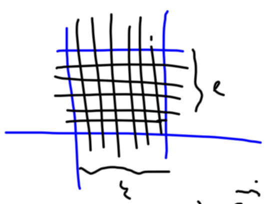
$\tilde f$





$\xi \cdot \varepsilon$

$$\boxed{e^{-i\omega(u+x)} = e^{-i\omega u} \cdot e^{-i\omega x}}$$

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