TRIGONOMETRIJSKI FOURIEROV RED

$$f(x)\sim\frac{a_0}{2}+\sum_{n=1}^{\infty}\left(a_n\cos\frac{2n\pi x}{T}+b_n\sin\frac{2n\pi x}{T}\right)$$

$$a_0=\frac{2}{T}\int_a^b f(x)dx$$

$$a_n=\frac{2}{T}\int_a^b f(x)\cos\left(\frac{2n\pi x}{T}\right)dx$$

$$b_n=\frac{2}{T}\int_a^b f(x)\sin\left(\frac{2n\pi x}{T}\right)dx$$

FOURIEROV RED PARNIH I NEPARNIH FUNKCIJA

- parna:

$$f(x)=\frac{a_0}{2}+\sum_{n=1}^{\infty}a_n\cos\left(\frac{n\pi x}{L}\right)$$

$$a_0=\frac{2}{L}\int_0^L f(x)\,dx$$

$$a_n=\frac{2}{L}\int_0^L f(x)\cos\left(\frac{n\pi x}{L}\right)dx$$

$$b_n=0$$

- neparna:

$$f(x)=\sum_{n=1}^{\infty}b_n\sin\left(\frac{n\pi x}{L}\right)$$

$$a_0=a_n=0$$

$$b_n=\frac{2}{L}\int_0^L f(x)\sin\left(\frac{n\pi x}{L}\right)dx$$

PARSEVALOVA JEDNAKOST

$$\frac{1}{2}a_0^2+\sum_{n=1}^{\infty}a_n^2+\sum_{n=1}^{\infty}b_n^2=\frac{2}{T}\int_a^b|f(x)|^2dx$$

FOURIEROV INTEGRAL

$$f(x)\sim\frac{1}{\pi}\int_0^{\infty}d\lambda\int_{-\infty}^{\infty}f(\xi)cos\lambda(x-\xi)d\xi$$

FOURIEROV INTEGRAL I SPEKTAR

$$f(x)\sim\int_0^{\infty}[A(\lambda)\cos(\lambda x)+B(\lambda)\sin(\lambda x)]d\lambda$$

$$A(\lambda)=\frac{1}{\pi}\int_{-\infty}^{\infty}f(\xi)\cos(\lambda\xi)\,d\xi$$

$$B(\lambda)=\frac{1}{\pi}\int_{-\infty}^{\infty}f(\xi)\sin(\lambda\xi)\,d\xi$$

LINEARNOST LAPLACEOVE TRANSFORMACIJE

$$\alpha f(t)+\beta g(t)\circ\!-\!\bullet\,\alpha F(s)+\beta G(s)$$

TEOREM O PRIGUŠENJU

$$e^{-at}f(t)\circ\!-\!\bullet\,F(s+a)$$

TEOREM O POMAKU

$$f(t-a)u(t-a)\circ\!-\!\bullet\,e^{-as}F(s)$$

LAPLACEOV TRANSFORMAT

$$F(s)=\int_0^{\infty}e^{-st}f(t)dt$$

KONVOLUCIJA

$$(f_1*f_2)(t)=\int_0^t f_1(\tau)f_2(t-\tau)d\tau$$

$$f_1(t)f_2(t)\circ\!-\!\bullet\,F_1(s)F_2(s)$$

TEOREM O DERIVIRANJU INTEGRALA

$$f'(t)\circ\!-\!\bullet\,sF(s)-f(0)$$

$$f^{(n)}(t)\circ\!-\!\bullet\,s^nF(s)-s^{n-1}f(0)-s^{n-2}f'(0)-\cdots-f^{(n-1)}(0)$$

TEOREM O DERIVIRANJU SLIKE

$$\frac{f(t)}{t}\circ\!-\!\bullet\int_s^{\infty}f(s)ds$$

TEOREM O INTEGRIRANJU ORIGINALA

$$\int_0^t f(\tau)d\tau\circ\!-\!\bullet\frac{F(s)}{s}$$

RLC KRUGOVI

$$R\circ\!-\!\bullet R\;;\;C\circ\!-\!\bullet\frac{1}{Cs}\;;\;L\circ\!-\!\bullet Ls$$

ČESTE TRANSFORMACIJE

$$1\circ\!-\!\bullet\frac{1}{s}$$

$$t\circ\!-\!\bullet\frac{1}{s^2}\;;\;t^n\circ\!-\!\bullet\frac{n!}{s^{n+1}}\;;\;\frac{t^n}{n!}\circ\!-\!\bullet\frac{1}{s^{n+1}}$$

$$e^{at}\circ\!-\!\bullet\frac{1}{s-a}\;;\;te^{at}\circ\!-\!\bullet\frac{1}{(s-a)^2}$$

$$\frac{1}{a}\sin(at)\circ\!-\!\bullet\frac{1}{s^2+a^2}\;;\cos(at)\circ\!-\!\bullet\frac{s}{s^2+a^2}$$

$$\frac{1}{a}\mathrm{sh}(at)\circ\!-\!\bullet\frac{1}{s^2-a^2}\;;\;\mathrm{ch}\,(at)\circ\!-\!\bullet\frac{s}{s^2-a^2}$$