Základní vztahy a korespondence
Laplaceovy transformace

$$\frac{\mathbf{k}}{\mathbf{s}} \doteqdot \mathbf{k}\,.\,\eta(t)$$

$$\frac{\mathbf{k}}{\mathbf{s}^n} \doteqdot \mathbf{k}\,\frac{1}{(n-1)!}\,\mathbf{t}^{n-1}.\,\eta(t)$$

$$\frac{\mathbf{k}}{\mathbf{s}-\mathbf{a}} \doteqdot \mathbf{k}\,e^{\mathbf{at}}.\,\eta(t)$$

$$\frac{\mathbf{k}}{(\mathbf{s}-\mathbf{a})^n} \doteqdot \mathbf{k}\,\frac{1}{(n-1)!}\,\mathbf{t}^{n-1}e^{\mathbf{at}}.\,\eta(t)$$

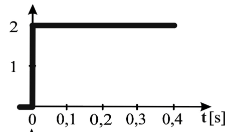
$$\mathbf{k}\,\frac{\omega}{\mathbf{s}^2+\omega^2} \doteqdot \mathbf{k}\,\sin(\omega t).\,\eta(t)$$

$$\mathbf{k}\,\frac{\mathbf{s}}{\mathbf{s}^2+\omega^2} \doteqdot \mathbf{k}\,\cos(\omega t).\,\eta(t)$$

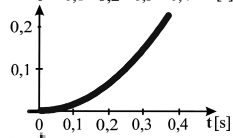
$$\mathbf{k}\,\frac{\omega}{(\mathbf{s}-\mathbf{a})^2+\omega^2} \doteqdot \mathbf{k}\,e^{\mathbf{at}}\sin(\omega t).\,\eta(t)$$

$$\mathbf{k}\,\frac{\mathbf{s}-\mathbf{a}}{(\mathbf{s}-\mathbf{a})^2+\omega^2} \doteqdot \mathbf{k}\,e^{\mathbf{at}}\cos(\omega t).\,\eta(t)$$

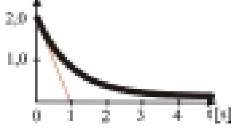
$$\frac{2}{\mathbf{s}} \doteqdot 2\,.\,\eta(t)$$



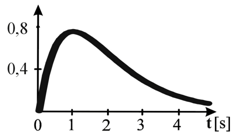
$$\frac{3}{\mathbf{s}^3} \doteqdot \frac{3}{2}\,\mathbf{t}^2\,.\,\eta(t)$$



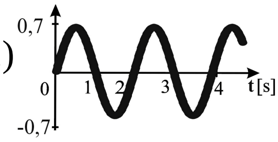
$$\frac{2}{\mathbf{s}+1} \doteqdot 2\,.\,e^{-\mathbf{t}}.\,\eta(t)$$



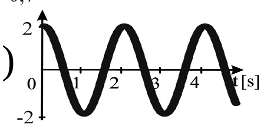
$$\frac{2}{(\mathbf{s}+1)^2} \doteqdot 2\,\mathbf{t}\,e^{-\mathbf{t}}.\,\eta(t)$$



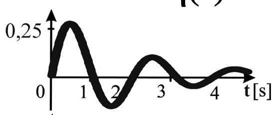
$$\frac{2}{\mathbf{s}^2+9} \doteqdot \frac{2}{3}\sin 3t.\,\eta(t)$$



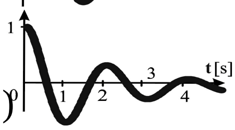
$$\frac{2\,\mathbf{s}}{\mathbf{s}^2+9} \doteqdot 2\cos 3t.\,\eta(t)$$



$$\frac{1}{(\mathbf{s}+0{,}5)^2+9} \doteqdot \frac{1}{3}\,e^{-0{,}5\,\mathbf{t}}\sin 3t\,.\eta(t)$$



$$\frac{\mathbf{s}+0{,}5}{(\mathbf{s}+0{,}5)^2+9} \doteqdot e^{-0{,}5\,\mathbf{t}}\cos 3t.\,\eta(t)$$



L - obraz derivací funkce

$$\mathbf{y}(t) \doteqdot \mathbf{Y}(\mathbf{s})$$

$$\mathbf{y}'(t) \doteqdot \mathbf{s}\,\mathbf{Y}(\mathbf{s})-\mathbf{y}(0+)$$

$$\mathbf{y}''(t) \doteqdot \mathbf{s}^2\mathbf{Y}(\mathbf{s})-\mathbf{s}\,\mathbf{y}(0+)-\mathbf{y}'(0+)$$

$$\vdots$$

$$\mathbf{y}^{(\mathbf{n})}(t) \doteqdot \mathbf{s}^{\mathbf{n}}\mathbf{Y}(\mathbf{s})-\mathbf{s}^{\mathbf{n}-1}\mathbf{y}(0+)-\mathbf{s}^{\mathbf{n}-2}\mathbf{y}'(0+)-\ldots-\mathbf{y}^{(\mathbf{n}-1)}(0+)$$

Limitní korespondence

$$\mathbf{y}(0+) = \lim_{\mathbf{s}\to\infty}\mathbf{s}\,\mathbf{Y}(\mathbf{s})$$

$$\mathbf{y}(\infty) = \lim_{\mathbf{s}\to 0}\mathbf{s}\,\mathbf{Y}(\mathbf{s})$$

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