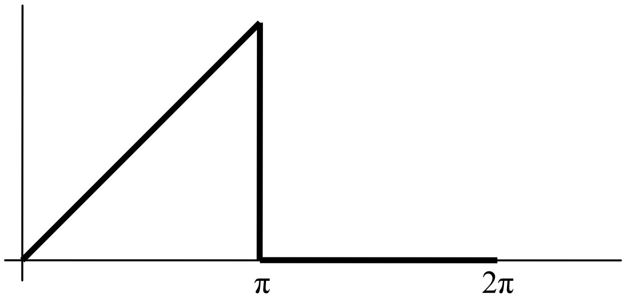


$s(t) = t$ pro $t \epsilon \langle 0; \pi \rangle$

$$a_0 = \frac{1}{\pi}.\int_0^{\pi} t.dt = \frac{1}{\pi}.\left[\frac{t^2}{2}\right]_0^{\pi} = \frac{1}{\pi}.\left(\frac{\pi^2}{2} - 0\right) = \frac{\pi}{2}$$

$$u' = 1 \quad v = \frac{1}{n}.\sin(n.t)$$

$$a_n = \frac{1}{\pi}.\int_0^{\pi} \overset{u}{\widetilde{t}}.\overbrace{\cos(\mathrm{n.t})}^{\mathrm{v}'}.\mathrm{dt} = \frac{1}{\pi}.\left\{\frac{1}{n}.[t.\sin(\mathrm{n.t})]_0^{\pi} - \frac{1}{n}.\int_0^{\pi} \sin(n.t).dt\right\} =$$

$$= -\frac{1}{n.\pi}.\left[-\frac{\cos(n.t)}{n}\right]_0^{\pi} = \frac{1}{\pi.n^2}.[\cos(n.\pi) - 1] = \frac{1}{\pi.n^2}.[(-1)^n - 1]$$

$$u' = 1 \quad v = -\frac{1}{n}.\cos(n.t)$$

$$b_n = \frac{1}{\pi}.\int_0^{\pi} \overset{u}{\widetilde{t}}.\overbrace{\sin(n.t)}^{v'}.dt = \frac{1}{\pi}.\left\{-\frac{1}{n}.[t.\cos(n.t)]_0^{\pi} + \frac{1}{n}.\int_0^{\pi} \cos(n.t)\,dt\right\} =$$

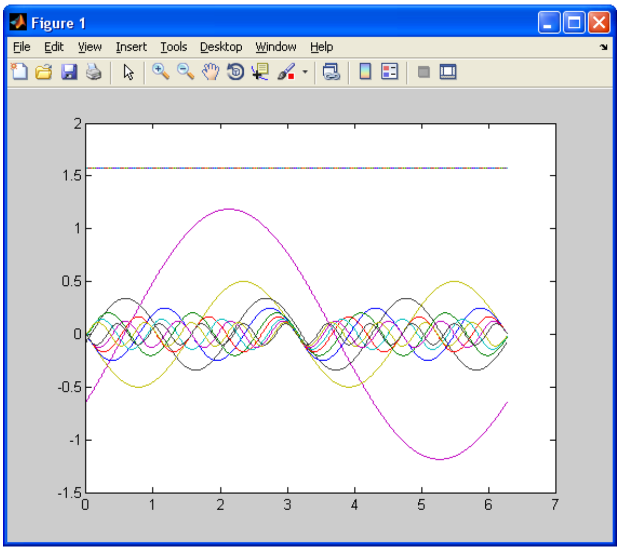
$$= \frac{1}{\pi.n}\left\{-[\pi.\cos(n.\pi)] + \left[\frac{\sin(n.t)}{n}\right]_0^{\pi}\right\} =$$

$$= \frac{1}{\pi.n}\left\{-\pi.(-1)^n + \frac{1}{n}.\underbrace{(\sin(n.\pi) - 0)}_{=0}\right\} = -\frac{1}{n}.(-1)^n$$

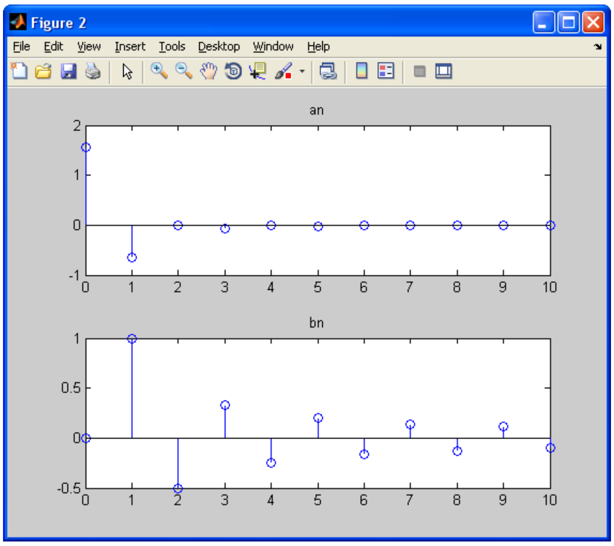
$$s(t) \sim \frac{a_0}{2} + \sum_{n=1}^{\infty} [a_n.\cos(n.t) + b_n.\sin(n.t)]$$

Pro n = 10:

Harmocnické složky:



Velikosti složek a_n a b_n:



Výsledný průběh