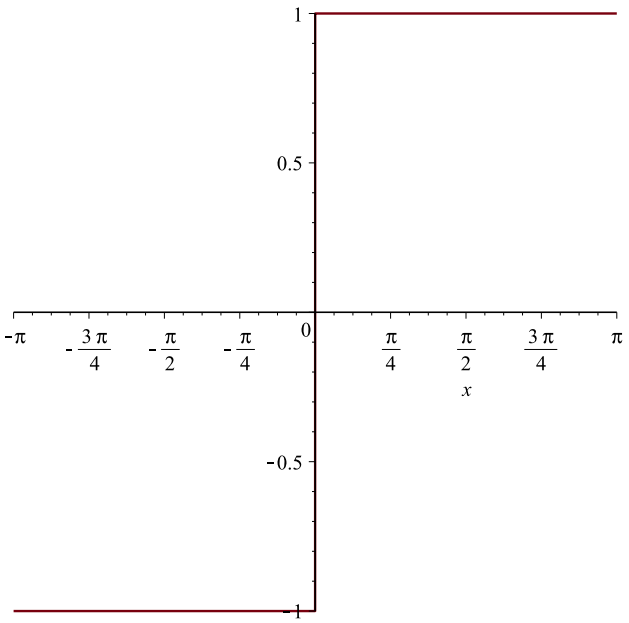
PRZYKAD 1

$f := piecewise(x > -\mathrm{Pi}\ \mathbf{and}\ x < 0, -1, x = 0, 0, x > 0\ \mathbf{and}\ x < \mathrm{Pi}, 1); plot(f, x = -\mathrm{Pi}..\mathrm{Pi})$

$$\begin{cases} -1 & -\pi < x \ \mathbf{and}\ x < 0 \\ 0 & x = 0 \\ 1 & 0 < x \ \mathbf{and}\ x < \pi \end{cases}$$



$$ff1 := \frac{2\cdot\left(1-(-1)^{1}\right)}{\mathrm{Pi}\cdot 1}\cdot\sin(1\cdot x)$$

$$\frac{4\sin(x)}{\pi} \qquad \textbf{(1)}$$

$$ff2 := \frac{2\cdot\left(1-(-1)^{2}\right)}{\mathrm{Pi}\cdot 2}\cdot\sin(2\cdot x)$$

$$0 \qquad \textbf{(2)}$$

$$ff3 := \frac{2\cdot\left(1-(-1)^{3}\right)}{\mathrm{Pi}\cdot 3}\cdot\sin(3\cdot x)$$

$$\frac{4}{3}\,\frac{\sin(3\,x)}{\pi} \tag{3}$$

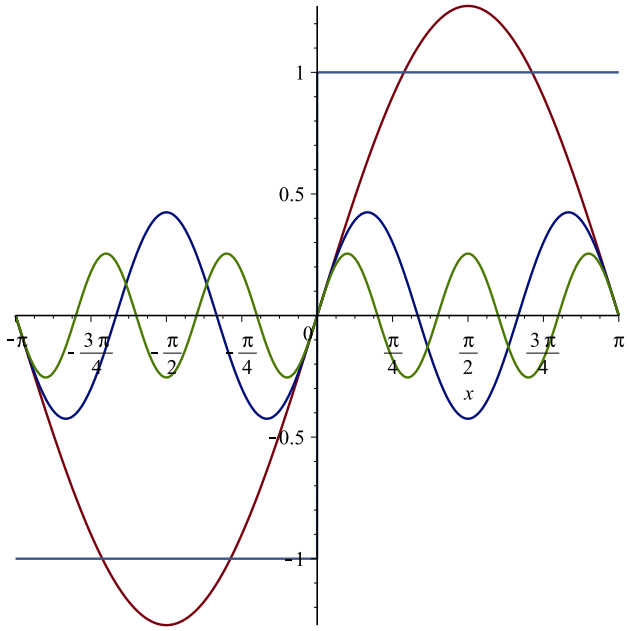
$$ff4 := \frac{2\cdot\left(1-(-1)^4\right)}{\mathrm{Pi}\cdot 4}\cdot\sin(4\cdot x)$$

$$0 \tag{4}$$

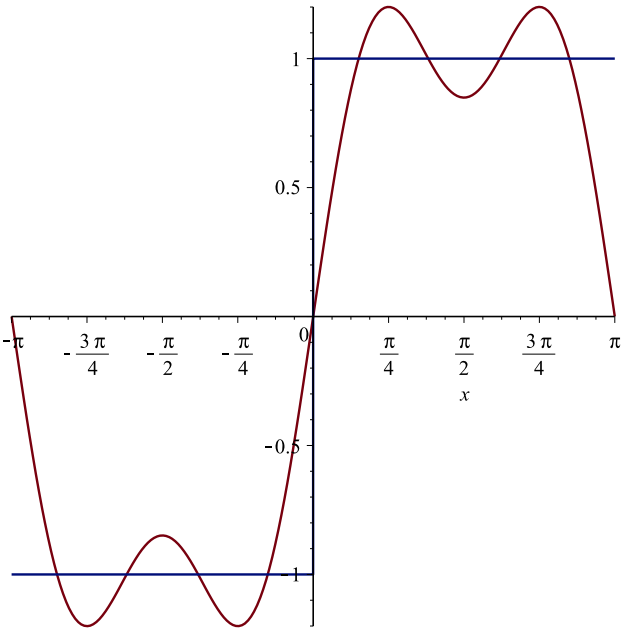
$$ff5 := \frac{2\cdot\left(1-(-1)^5\right)}{\mathrm{Pi}\cdot 5}\cdot\sin(5\cdot x)$$

$$\frac{4}{5}\,\frac{\sin(5\,x)}{\pi} \tag{5}$$

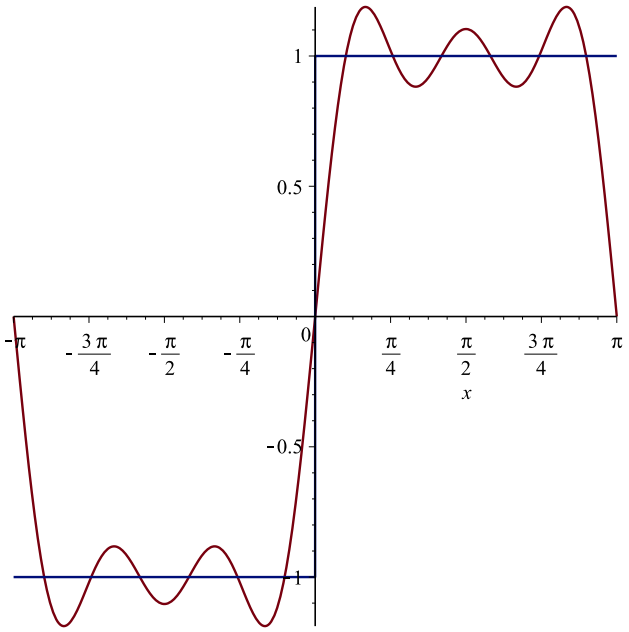
plot({ $f, ff1, ff3, ff5$ }, $x = -\mathrm{Pi}..\mathrm{Pi}$)



plot({ $f, ff1 + ff3$ }, $x = -\mathrm{Pi}..\mathrm{Pi}$)



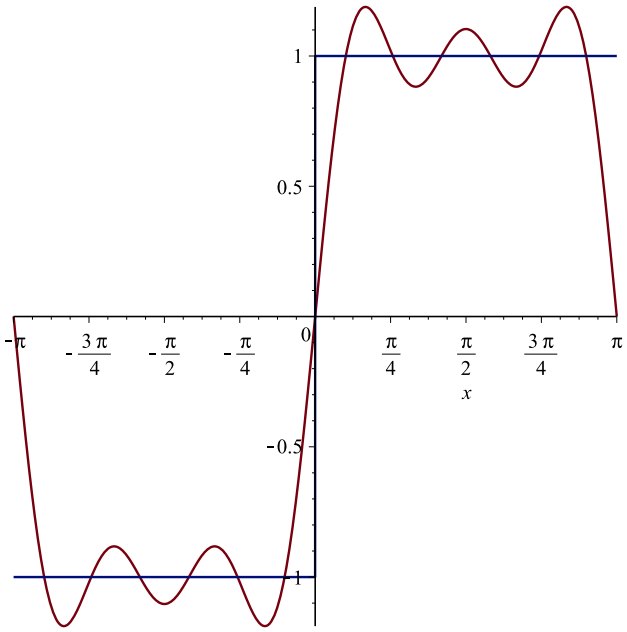
plot({ $f, ff1 + ff3 + ff5$ }, $x = -\mathrm{Pi}..\mathrm{Pi}$)



$$\text{ffn} := \text{Sum}\left(\frac{2\cdot\left(1-(-1)^{n}\right)}{\text{Pi}\cdot n}\cdot\sin(n\cdot x),\ n=1..5\right)$$

$$\sum_{n=1}^{5}\frac{2\left(1-(-1)^{n}\right)\sin(n\,x)}{\pi\,n} \qquad \textbf{(6)}$$

$plot(\{f, ffn\}, x=-\text{Pi}..\text{Pi})$



$$with(plots) : animate\left(\text{plot}, \left[\left\{f, Sum\left(\frac{2\cdot\left(1-(-1)^{n}\right)}{\text{Pi}\cdot n}\cdot\sin(n\cdot x), n=1..A\cdot 2\right)\right\}, x=-\text{Pi}..\text{Pi}\right], A=1..10, frames=10, trace=0\right)$$

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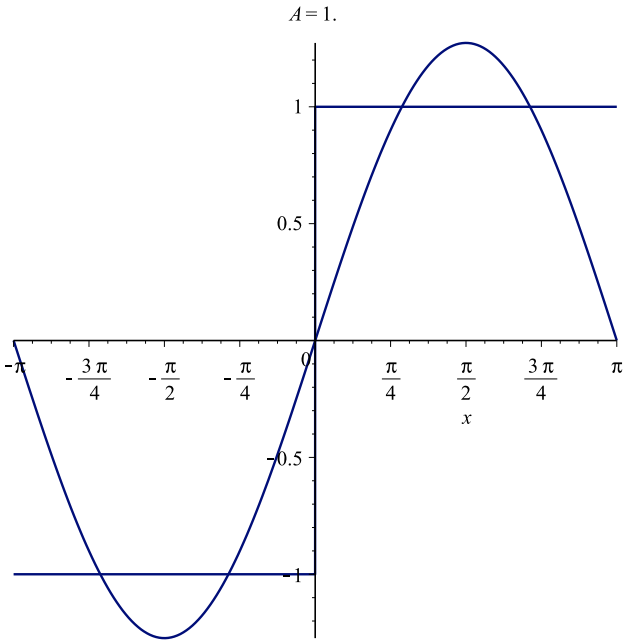
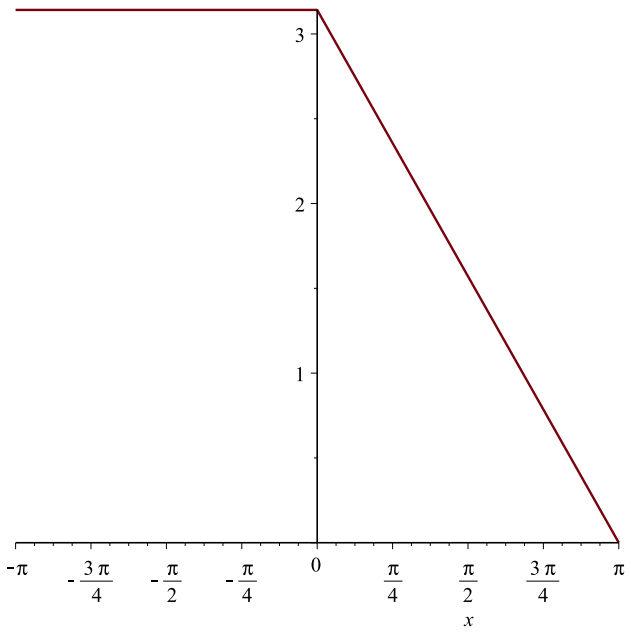


PRZYKAD 2

restart; $f := piecewise(x > -\mathrm{Pi}\ \mathbf{and}\ x < 0, \mathrm{Pi}, x = 0, \mathrm{Pi}, x > 0\ \mathbf{and}\ x < \mathrm{Pi}, \mathrm{Pi} - x)$; $plot(f, x = -\mathrm{Pi}..\mathrm{Pi})$

[>

$$\begin{cases} \pi & -\pi < x\ \mathbf{and}\ x < 0 \\ \pi & x = 0 \\ \pi - x & 0 < x\ \mathbf{and}\ x < \pi \end{cases}$$



$$ff0 := \frac{3 \cdot \mathrm{Pi}}{4};\ ff1 := \frac{\left(1 - (-1)^1\right)}{\mathrm{Pi} \cdot 1^2} \cdot \cos(1 \cdot x) + \frac{(-1)^1}{1} \cdot \sin(1 \cdot x)$$

$$\frac{3}{4}\ \pi$$

$$\frac{2\cos(x)}{\pi} - \sin(x) \qquad \textbf{(7)}$$

$$ff2 := \frac{\left(1 - (-1)^2\right)}{\mathrm{Pi} \cdot 2^2} \cdot \cos(2 \cdot x) + \frac{(-1)^2}{2} \cdot \sin(2 \cdot x)$$

$$\frac{1}{2}\ \sin(2\,x) \qquad \textbf{(8)}$$

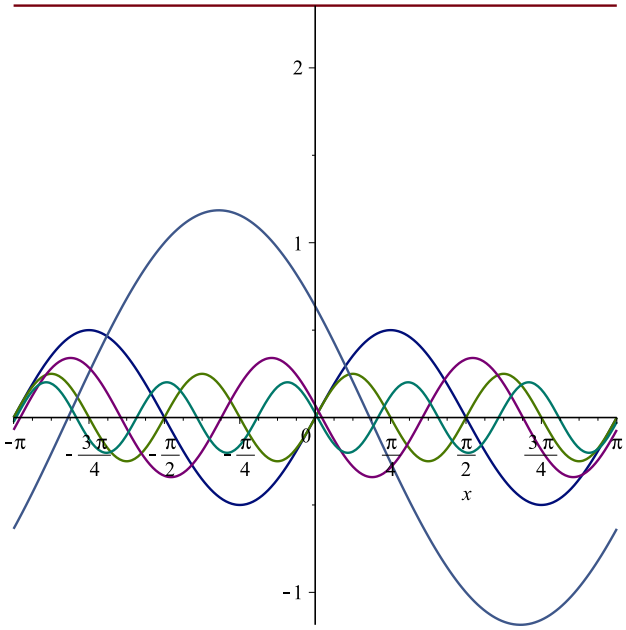
$$ff3 := \frac{\left(1 - (-1)^3\right)}{\mathrm{Pi} \cdot 3^2} \cdot \cos(3 \cdot x) + \frac{(-1)^3}{3} \cdot \sin(3 \cdot x);\ ff4 := \frac{\left(1 - (-1)^4\right)}{\mathrm{Pi} \cdot 4^2} \cdot \cos(4 \cdot x) + \frac{(-1)^4}{4} \cdot \sin(4 \cdot x);\ ff5 := \frac{\left(1 - (-1)^5\right)}{\mathrm{Pi} \cdot 5^2} \cdot \cos(5 \cdot x) + \frac{(-1)^5}{5} \cdot \sin(5 \cdot x)$$

$$\frac{2}{9}\,\frac{\cos(3\,x)}{\pi}-\frac{1}{3}\,\sin(3\,x)$$

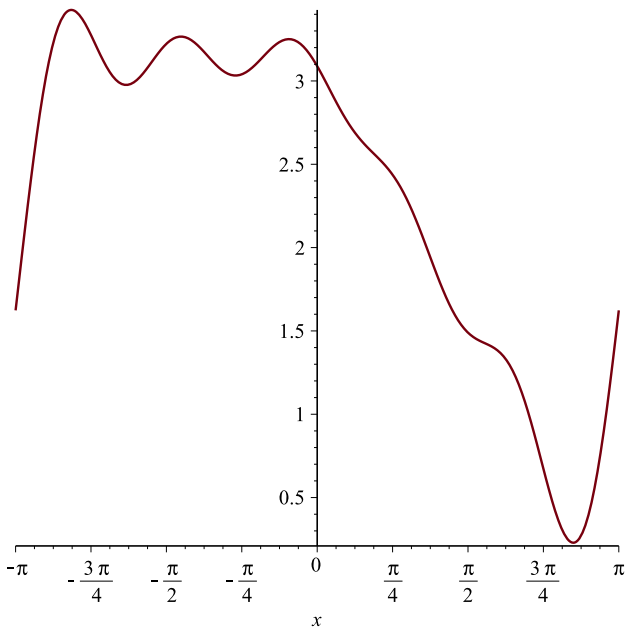
$$\frac{1}{4}\,\sin(4\,x)$$

$$\frac{2}{25}\,\frac{\cos(5\,x)}{\pi}-\frac{1}{5}\,\sin(5\,x) \qquad \textbf{(9)}$$

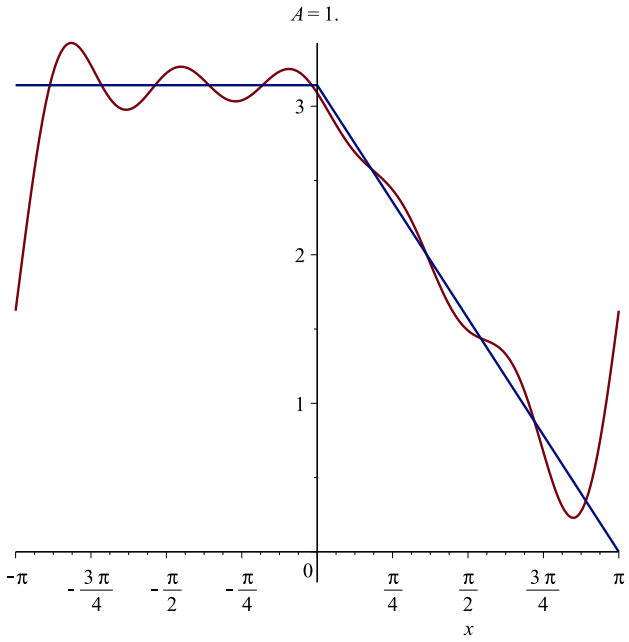
> $plot(\{ff0, ff1, ff2, ff3, ff4, ff5\}, x = -\mathrm{Pi}..\mathrm{Pi})$



$$plot\left(\frac{3\cdot\mathrm{Pi}}{4}+Sum\left(\frac{\left(1-(-1)^{n}\right)}{\mathrm{Pi}\cdot n^{2}}\cdot\cos(n\cdot x)+\frac{(-1)^{n}}{n}\cdot\sin(n\cdot x), n=1..5\right), x=-\mathrm{Pi}..\mathrm{Pi}\right)$$



$$with(plots) : animate\left(\text{plot}, \left[\left\{f, \frac{3\cdot \text{Pi}}{4} + Sum\left(\frac{\left(1-(-1)^{n}\right)}{\text{Pi}\cdot n^{2}}\cdot\cos(n\cdot x) + \frac{(-1)^{n}}{n}\cdot\sin(n\cdot x), n=1..5\right)\cdot A\right\}, x=-\text{Pi}..\text{Pi}\right], A=1..8, frames=8, trace=0\right)$$


A = 1.
3
2
1
0
-π
-3π/4
-π/2
-π/4
π/4
π/2
3π/4
π
x