Testataufgabe SW2
Felix Rohrer

> *restart*

201)

> $f := x \rightarrow \frac{(x^2+1)}{(\cos(x)+\mathrm{Pi})}$

$$f := x \rightarrow \frac{x^2+1}{\cos(x)+\pi} \tag{1}$$

> $f(0)$

$$\frac{1}{1+\pi} \tag{2}$$

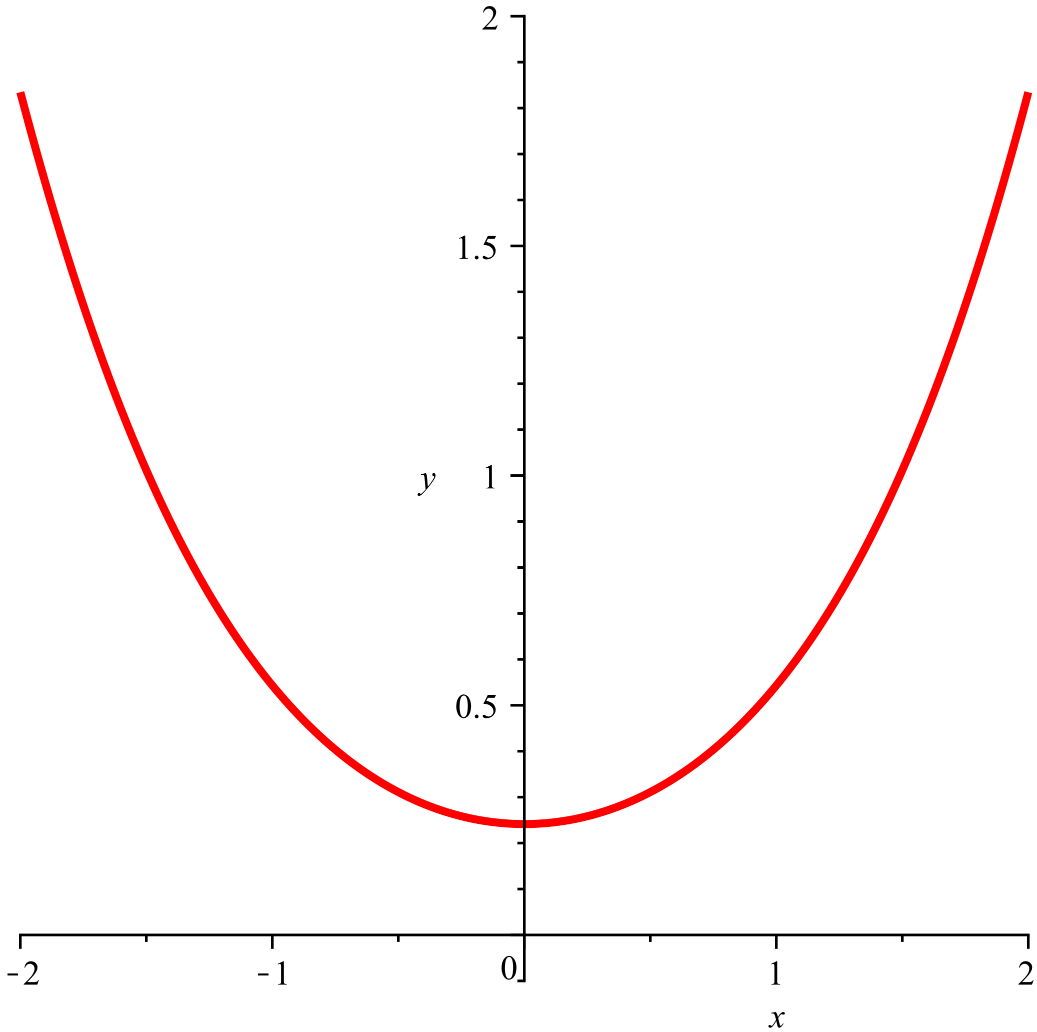
> $f(a)$

$$\frac{a^2+1}{\cos(a)+\pi} \tag{3}$$

> $f(0.5)$

$$\frac{1.25}{0.8775825619+\pi} \tag{4}$$

> $plot(f(x), x=-2..2, y=-0.1..2, thickness=3)$



2
1.5
y
1
0.5
-2
-1
0
1
2
x

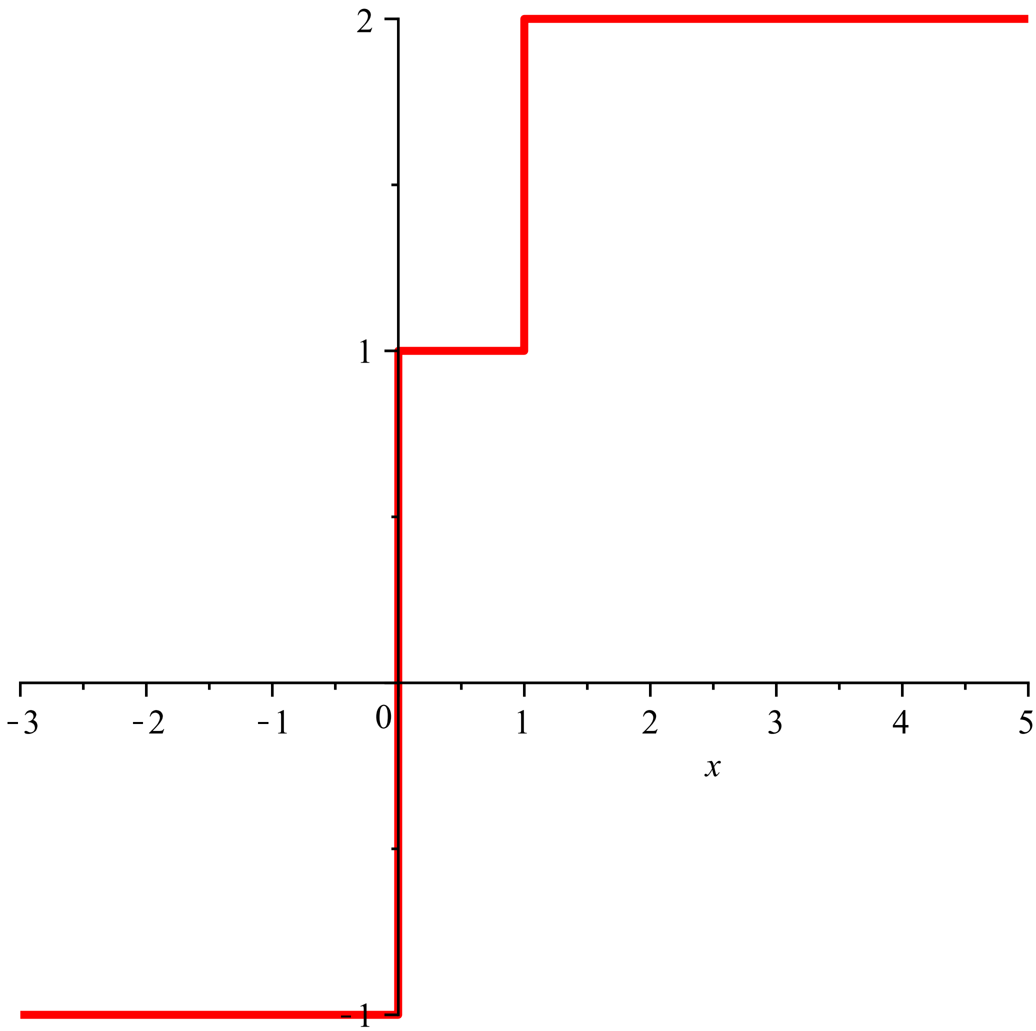
202)

> $restart$

> $f := x \to piecewise(x < 0, -1, x \leq 1, 1, 2)$

$$f := x \to piecewise(x < 0,\ -1,\ x \leq 1,\ 1,\ 2) \tag{5}$$

> $plot(f(x), x = -3 .. 5, thickness = 3)$



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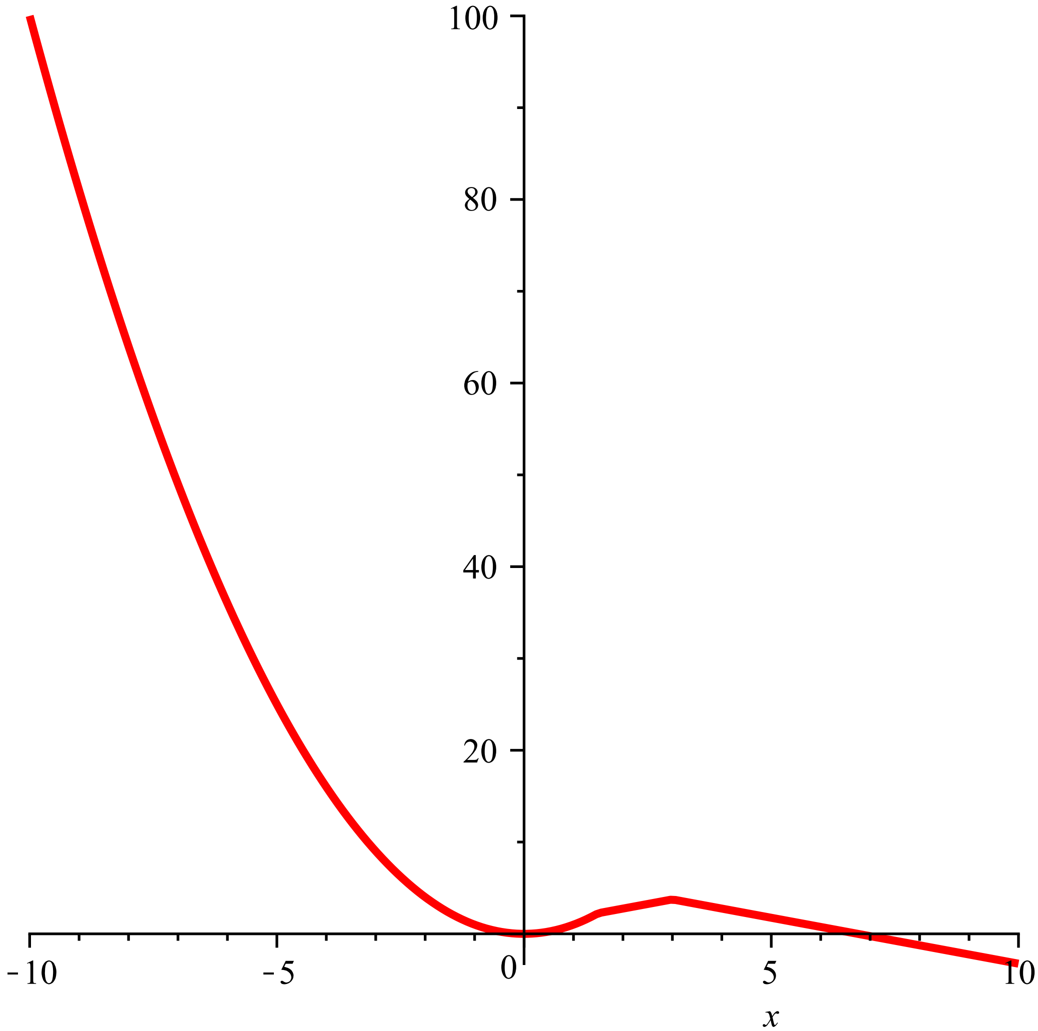
203)

> *restart*

> $f := x \rightarrow piecewise(x < 1.5, x^2, x < 3, x + .75, 6.75 - x)$

$$f := x \rightarrow piecewise(x < 1.5, x^2, x < 3, x + 0.75, 6.75 - x) \quad \textbf{(6)}$$

> $plot(f(x), thickness = 3)$



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204)

> *restart*

> $f := (x, y) \rightarrow \mathrm{sqrt}(x^2 + y^2)$

$$f := (x, y) \rightarrow \sqrt{x^2 + y^2} \quad (7)$$

> $f(3, 4)$

$$5 \quad (8)$$

> $f(0, -9)$

$$9 \quad (9)$$

>

205)

a)

> $restart$

> $s := \sum_{k=1}^{n} k^2$

$$s := \frac{1}{3}\,(n+1)^3 - \frac{1}{2}\,(n+1)^2 + \frac{1}{6}\,n + \frac{1}{6} \tag{10}$$

b) Term umwandeln in eine Funktion

> $h := unapply(s, n)$

$$h := n \rightarrow \frac{1}{3}\,(n+1)^3 - \frac{1}{2}\,(n+1)^2 + \frac{1}{6}\,n + \frac{1}{6} \tag{11}$$

> $h(5)$

$$55 \tag{12}$$

> $h(6)$

$$91 \tag{13}$$

> $h(7)$

$$140 \tag{14}$$

>

206)

> *restart*

> $f := x \rightarrow 3 \cdot x^4 - 7 \cdot x^2 + 5$

$$f := x \rightarrow 3\,x^4 - 7\,x^2 + 5 \qquad \textbf{(15)}$$

> $f(-5) - f(5)$

$$0 \qquad \textbf{(16)}$$

Resultat = 0 ==> gerade Funktion

> $g := x \rightarrow 4 \cdot x^3 - 3 \cdot x + \sin(x)$

$$g := x \rightarrow 4\,x^3 - 3\,x + \sin(x) \qquad \textbf{(17)}$$

> $g(-6) - g(6)$

$$-1692 - 2\,\sin(6) \qquad \textbf{(18)}$$

Resultat != 0 ==> ungerade Funktion

>

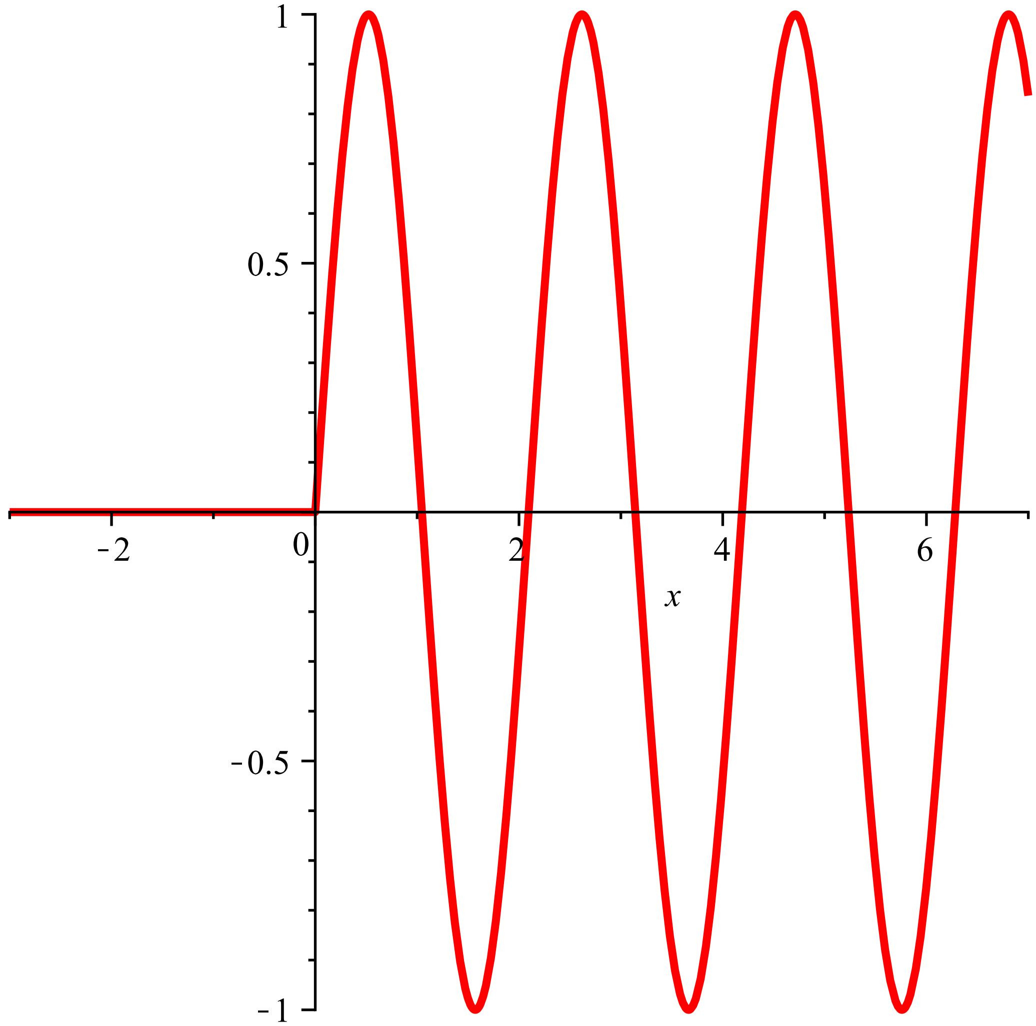
207)

> *restart*

> $f := x \rightarrow \sin(3 \cdot x) \cdot \text{Heaviside}(x)$

$$f := x \rightarrow \sin(3\,x)\ \text{Heaviside}(x) \tag{19}$$

> $plot(f(x), x = -3..7, thickness = 3)$



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