201)

```
> f := x -> (x^2 + 1)/(cos(x) + Pi)
```

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

```
> f(0)
```

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

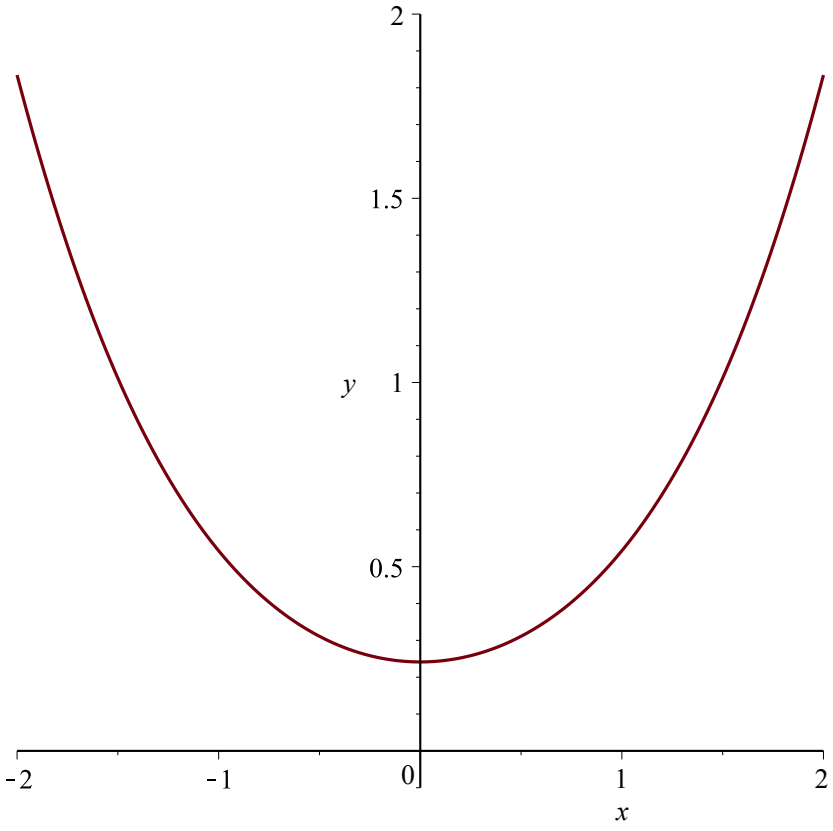
```
> f(a)
```

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

```
> f(0.5)
```

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

```
> plot(f(x), x = -2..2, y = -0.1..2)
```

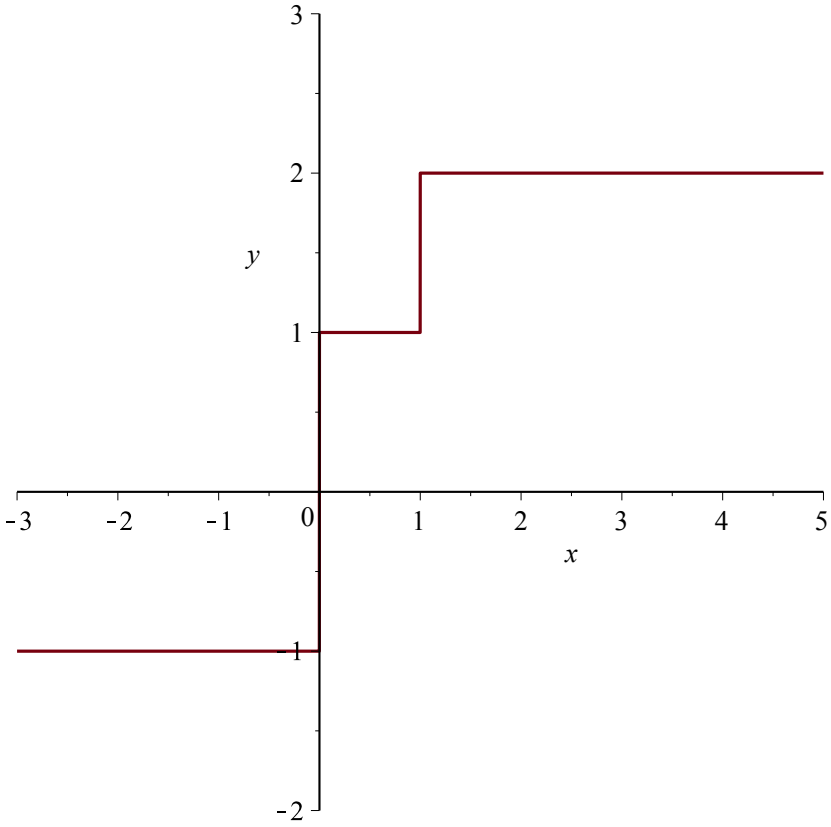


202)

```
> f := x→piecewise(x < 0, -1, x < 1, 1, 2)
```

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

```
> plot(f(x), x = -3..5, y = -2..3)
```

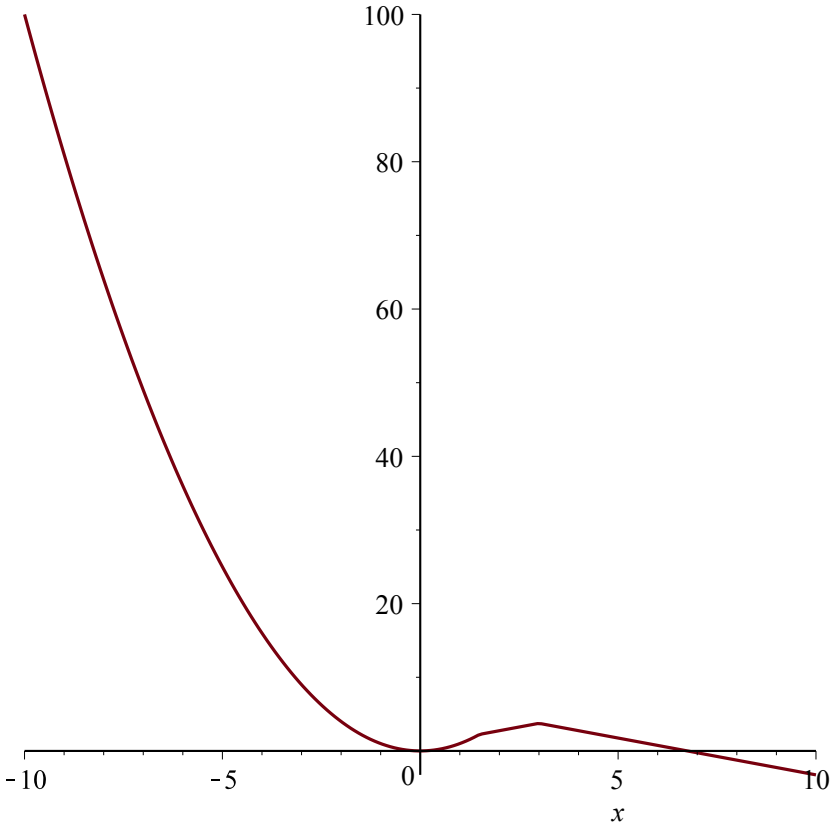


203)

```
> f := x→piecewise(x < 1.5, x^2, x < 3, x + 0.75, 6.75 - x)
```

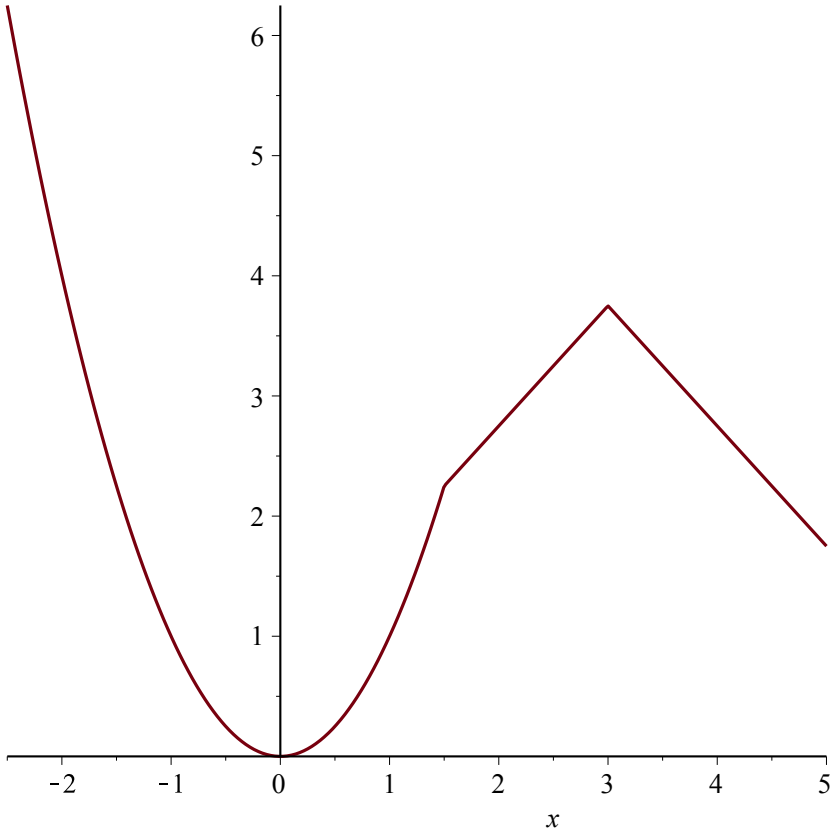
$$f := x \to piecewise(x < 1.5, x^2, x < 3, x + 0.75, 6.75 - x) \quad \textbf{(6)}$$

```
> plot(f(x))
```



for better visibility of the points where the condition changes are the plot is redrawm with spezified x-range

> $plot(f(x), x=-2.5..5)$



204)

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

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

> $f(3, 4)$

$$5 \quad \textbf{(8)}$$

> $f(0, -9)$

$$9 \quad \textbf{(9)}$$

205)

> $s := sum(k^2, K = 1 .. n)$

$$s := n\,k^2 \quad \textbf{(10)}$$

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

$$h := n \rightarrow n\,k^2 \quad \textbf{(11)}$$

> $h(5)$

(12)

$$5\,k^2 \quad \textbf{(12)}$$

> $h(6)$

$$6\,k^2 \quad \textbf{(13)}$$

> $h(7)$

$$7\,k^2 \quad \textbf{(14)}$$

206)

a)

> $f := x \to 3\,x^4 - 7\,x^2 + 5$

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

> $verify(f(x), f(-x), equal)$

$$true \quad \textbf{(16)}$$

> $verify(f(x), -f(-x), equal)$

$$FAIL \quad \textbf{(17)}$$

=> even

b)

> $f := x \to 4\,x^3 - 3\,x + \sin(x)$

$$f := x \to 4\,x^3 - 3\,x + \sin(x) \quad \textbf{(18)}$$

> $verify(f(x), f(-x), equal)$

$$FAIL \quad \textbf{(19)}$$

> $verify(f(x), -f(-x), equal)$

$$true \quad \textbf{(20)}$$

=>odd

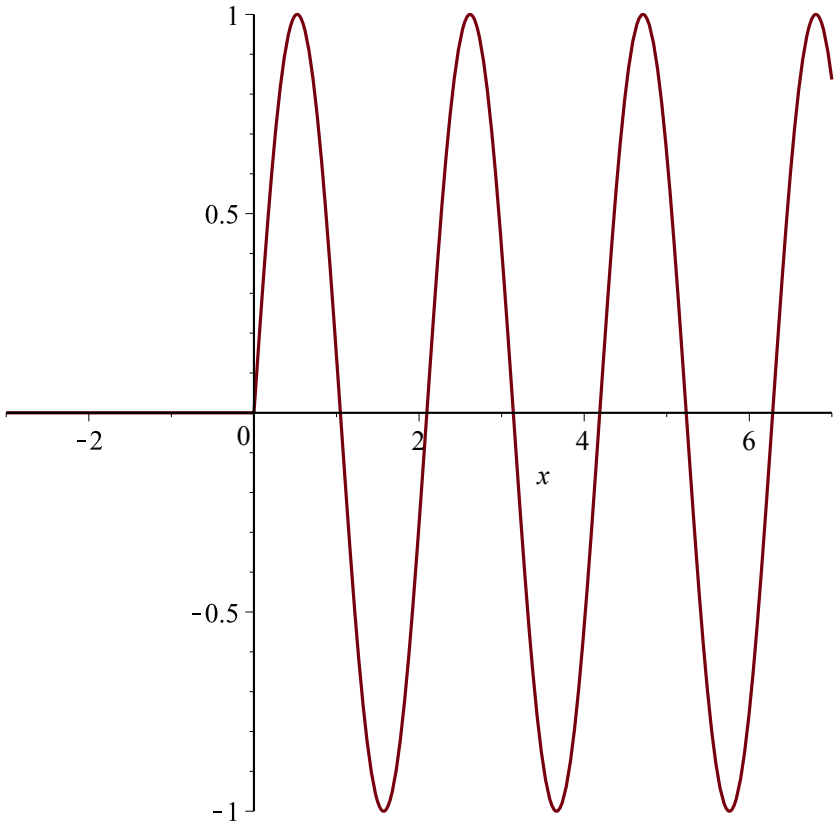
207)

Definition with piecewise():

> $f := x \to piecewise(x < 0, 0, \sin(3\,x))$

$$f := x \to piecewise(x < 0, 0, \sin(3\,x)) \quad \textbf{(21)}$$

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

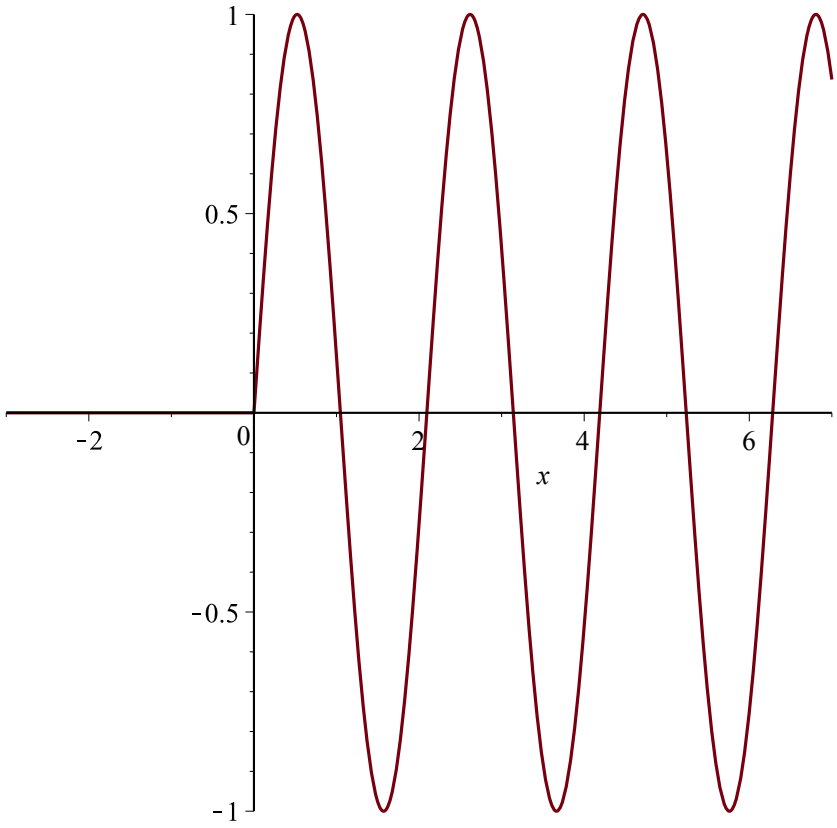


Definition as a product of a sine function and the Heaviside function:

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

$$f := x \to \sin(3\,x)\ \text{Heaviside}(x) \qquad \textbf{(22)}$$

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


1
0.5
-0.5
-1
-2
0
2
4
6
x