```
> f := x -> piecewise(0 < x and x < Pi, Pi/4, -Pi < x and x < 0, -Pi/4);
```

$$f := x \mapsto \begin{cases} \frac{\pi}{4} & 0 < x < \pi \\ -\frac{\pi}{4} & -\pi < x < 0 \end{cases} \quad (1)$$

```
> b := n-> 1/Pi*int(f(x)*sin((2*n+1)*x), x=-Pi..Pi)
```

$$b := n \mapsto \frac{\int_{-\pi}^{\pi} f(x)\cdot\sin((2\cdot n+1)\cdot x)\,dx}{\pi} \quad (2)$$

```
> b0 := b(0)
```

$$b0 := 1 \quad (3)$$

```
> b1 := b(1)
```

$$b1 := \frac{1}{3} \quad (4)$$

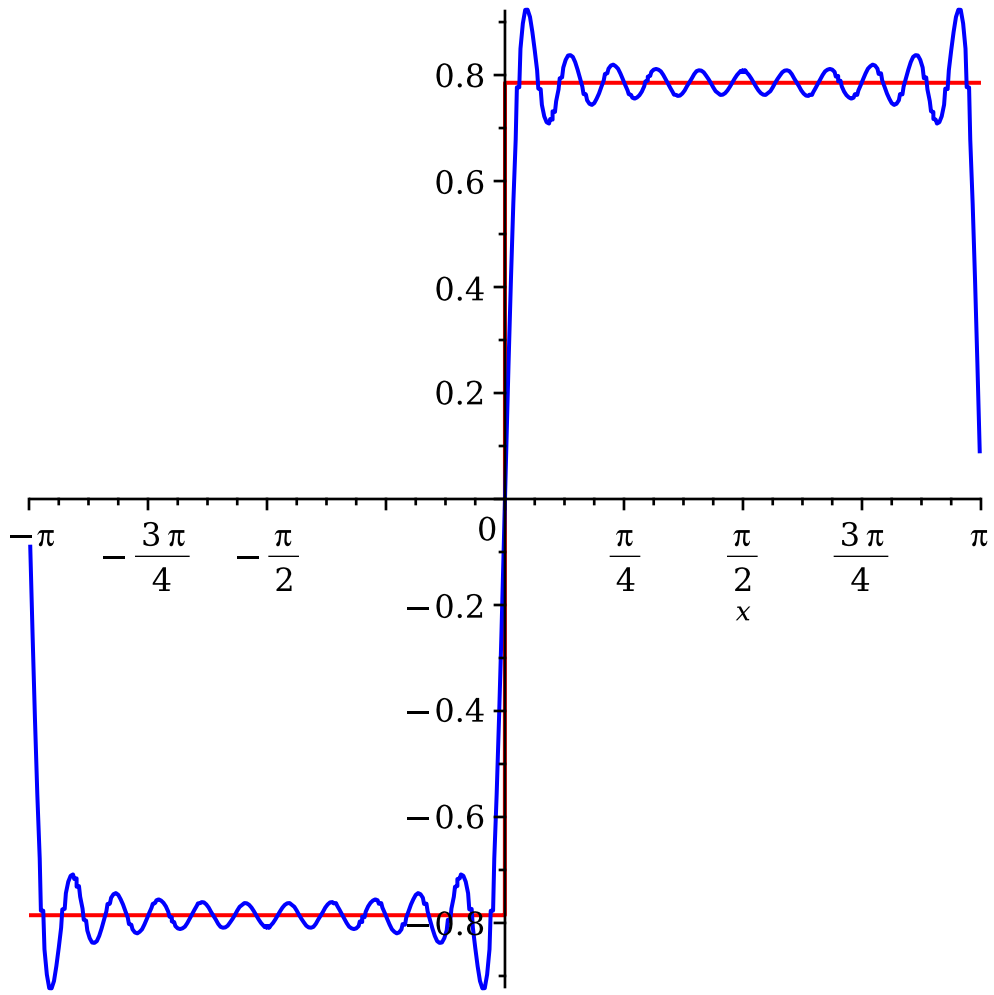
```
> b2 := b(2)
```

$$b2 := \frac{1}{5} \quad (5)$$

```
> # Hier zien we dus dan b(n) = 1:(2n+1)
> # Construct the Fourier series
  fourier_series := n->Sum(b(n)*sin((2*n + 1)*x), n = 0 .. infinity);
```

$$fourier\_series := n \mapsto \sum_{n=0}^{\infty} b(n)\cdot\sin((2\cdot n+1)\cdot x) \quad (6)$$

```
> # Show convergence in Pi:4
> plot([f(x), add(b(n)*sin((2*n + 1)*x), n = 0 .. 10)], x = -Pi .. Pi, color = [red,
      blue]);
```




```
> evalf(Pi/4)
```

0.7853981635 **(7)**

```
> #Hupa you see it is correct.
```