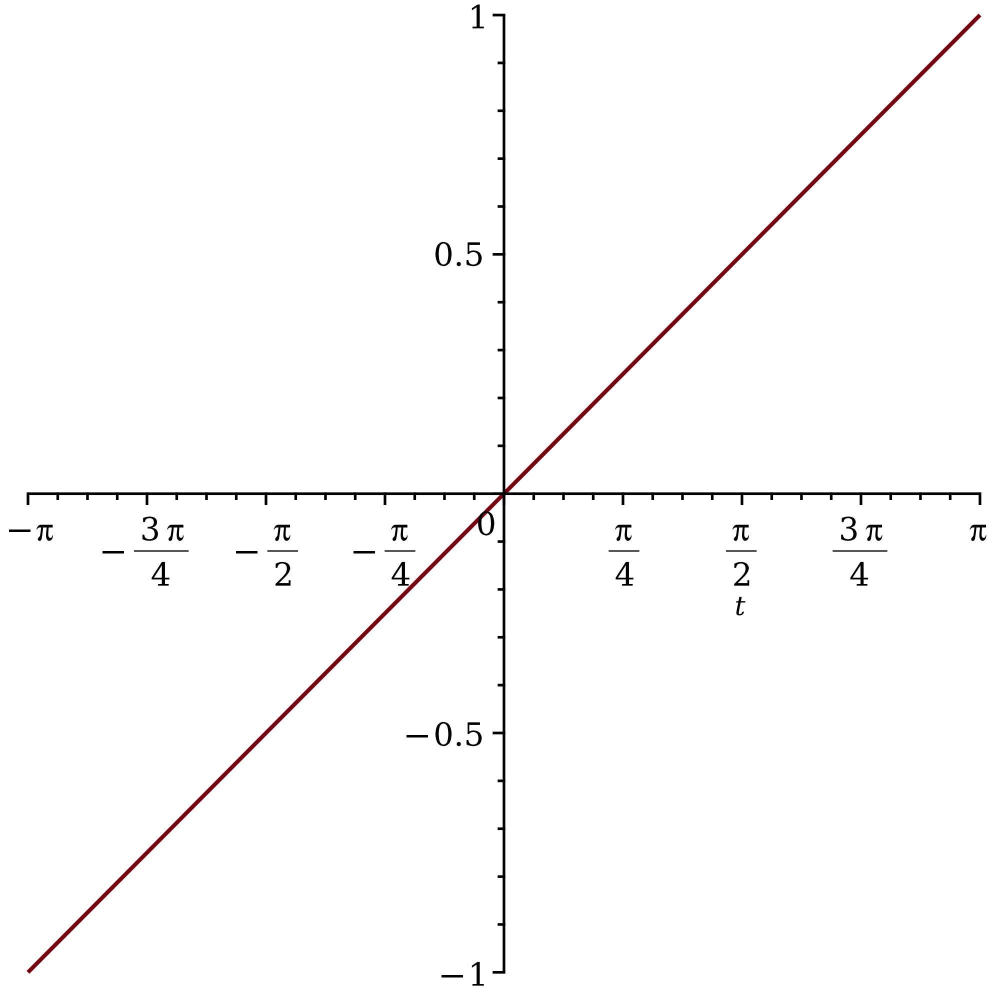
> $restart : with(plots) :$

> $f := t \to \frac{t}{\mathrm{Pi}} :$

> $plot(f(t), t = -\mathrm{Pi}..\mathrm{Pi})$



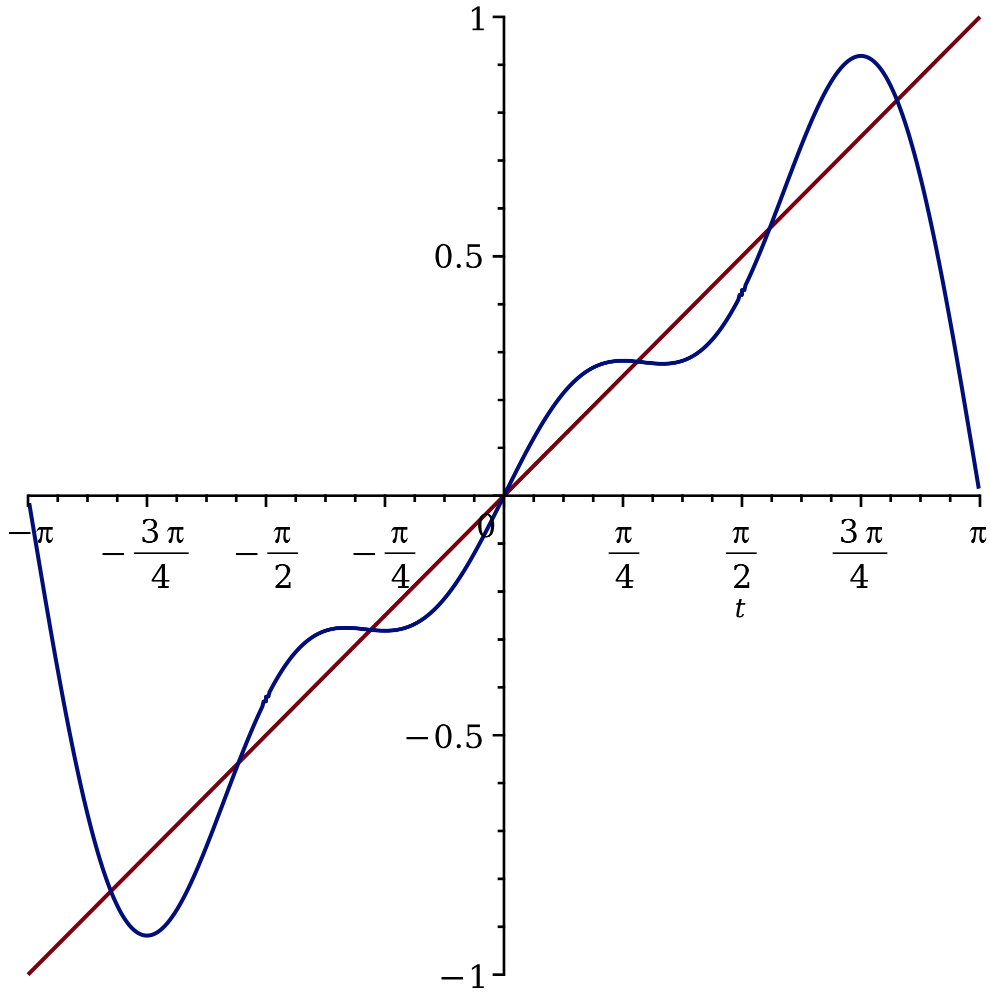
> *# Odd function! So* $a_n = 0$

$b := n \to simplify\left(\frac{1}{\mathrm{Pi}} \cdot int(f(t) \cdot \sin(n \cdot t), t = -\mathrm{Pi}..\mathrm{Pi})\right) :$

> $N := 3 :$ *# Number of terms*

$f\_approx := eval(add(b(n) * \sin(n * t), n = 1 .. N)) :$

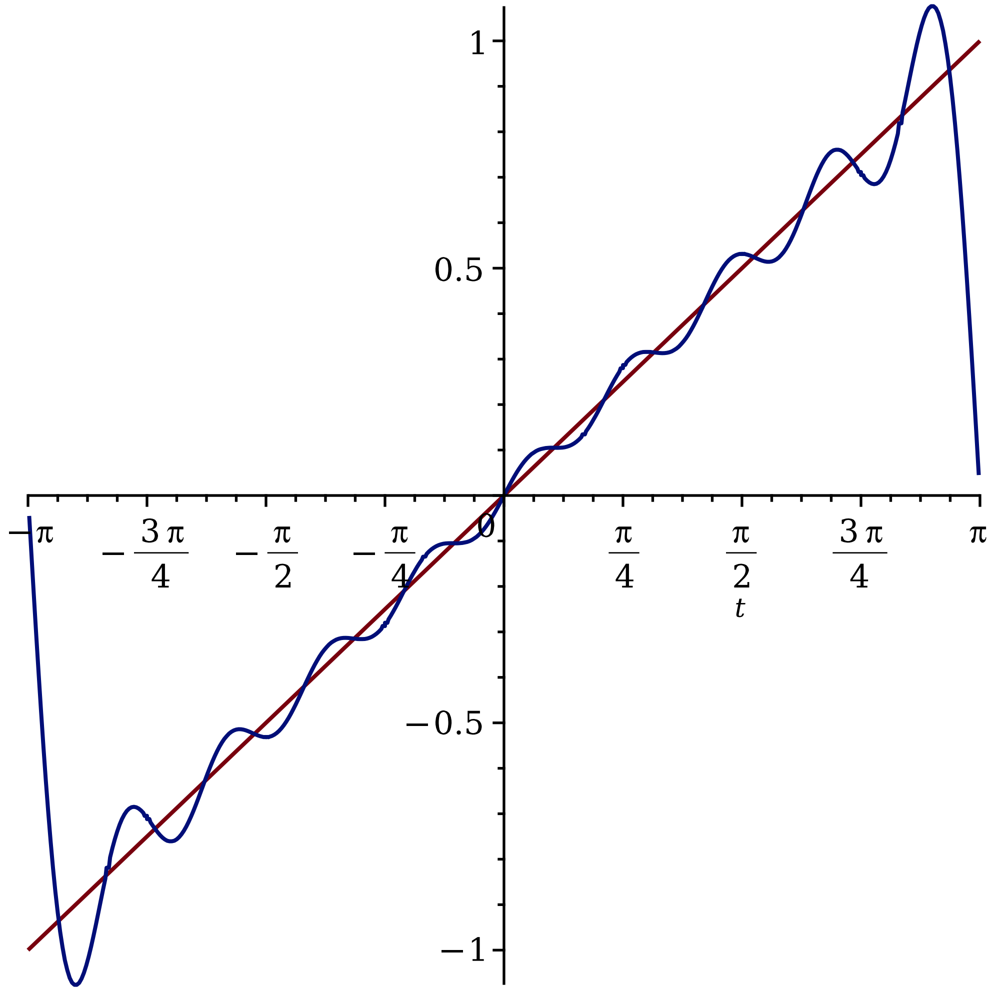
> $plot([f(t), f\_approx], t = -\mathrm{Pi}..\mathrm{Pi})$



\>

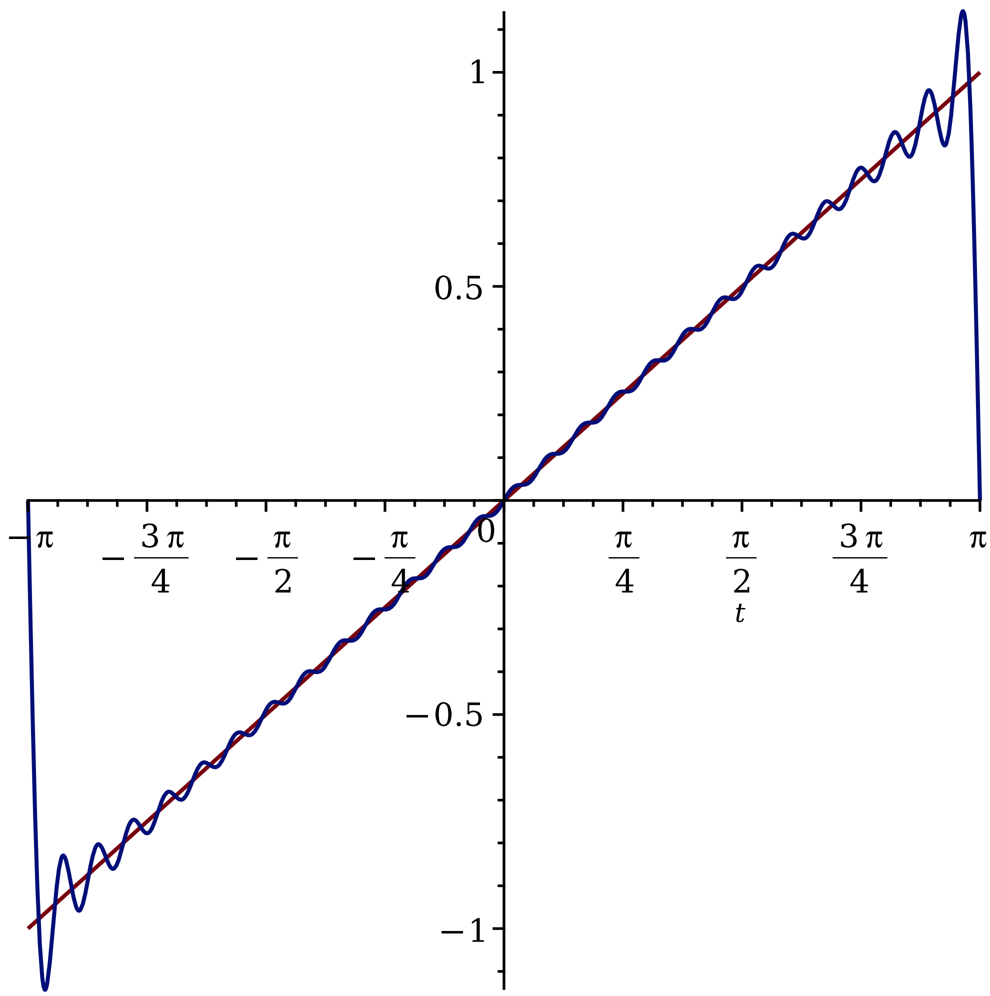
\> $N := 9:$ # *Number of terms*
$f\_approx := eval(add(b(n) * \sin(n * t), n = 1..N)):$

\> $plot([f(t), f\_approx], t = -\mathrm{Pi}..\mathrm{Pi})$




```
> N := 27 :  # Number of terms
  f_approx := eval(add(b(n)*sin(n*t), n = 1 .. N)) :
```

```
> plot([f(t), f_approx], t = -Pi..Pi)
```



> # We see that the higher N, the better the approximation, but on the edge points Pi and -Pi we diverge, this is the law of Gibbs

>