

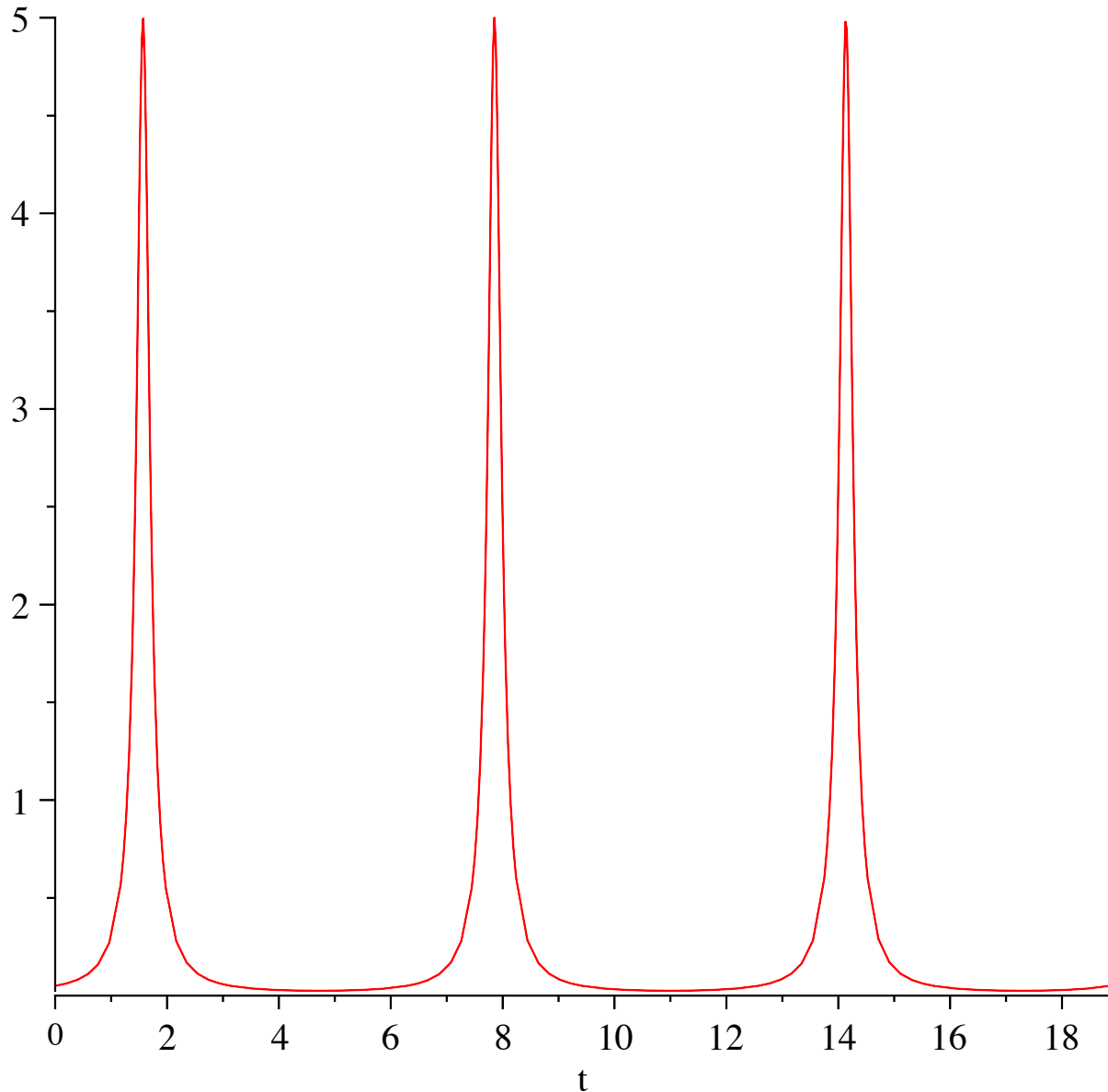
```
> restart;
> with(plots):
Warning, the name changecoords has been redefined
```

```
> f:=t-> 5/(100-99*sin(t));
```

$$f := t \rightarrow \frac{5}{100 - 99 \sin(t)}$$

(1)

```
> plot(f(t), t=0..6*Pi);
```



```
> S:=x->int(f, 0..x, 'continuous') assuming x>0; # Stammfunktion
S := x -> int(f, 0..x, 'continuous')
```

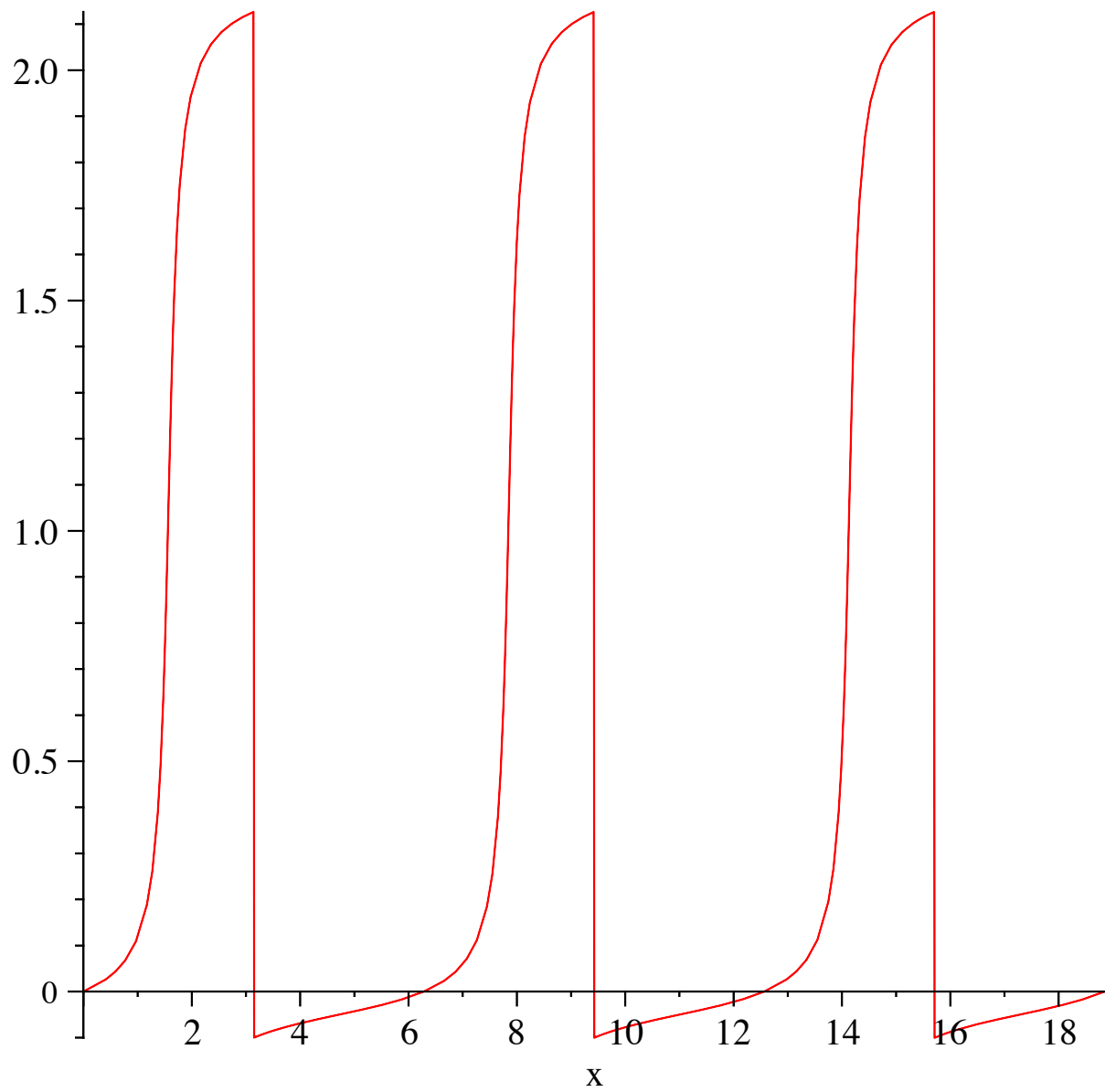
(2)

```
> eval(S(x));
```

$$\frac{10}{199} \arctan\left(\frac{99\sqrt{199}}{199}\right) \sqrt{199} + \frac{10}{199} \sqrt{199} \arctan\left(\frac{1}{199} \left(100 \tan\left(\frac{x}{2}\right) - 99\right) \sqrt{199}\right)$$

(3)

```
> plot(S(x)-S(0), x=0..6*Pi); # Standardvorgehen falsch, liefert
negative Werte
```

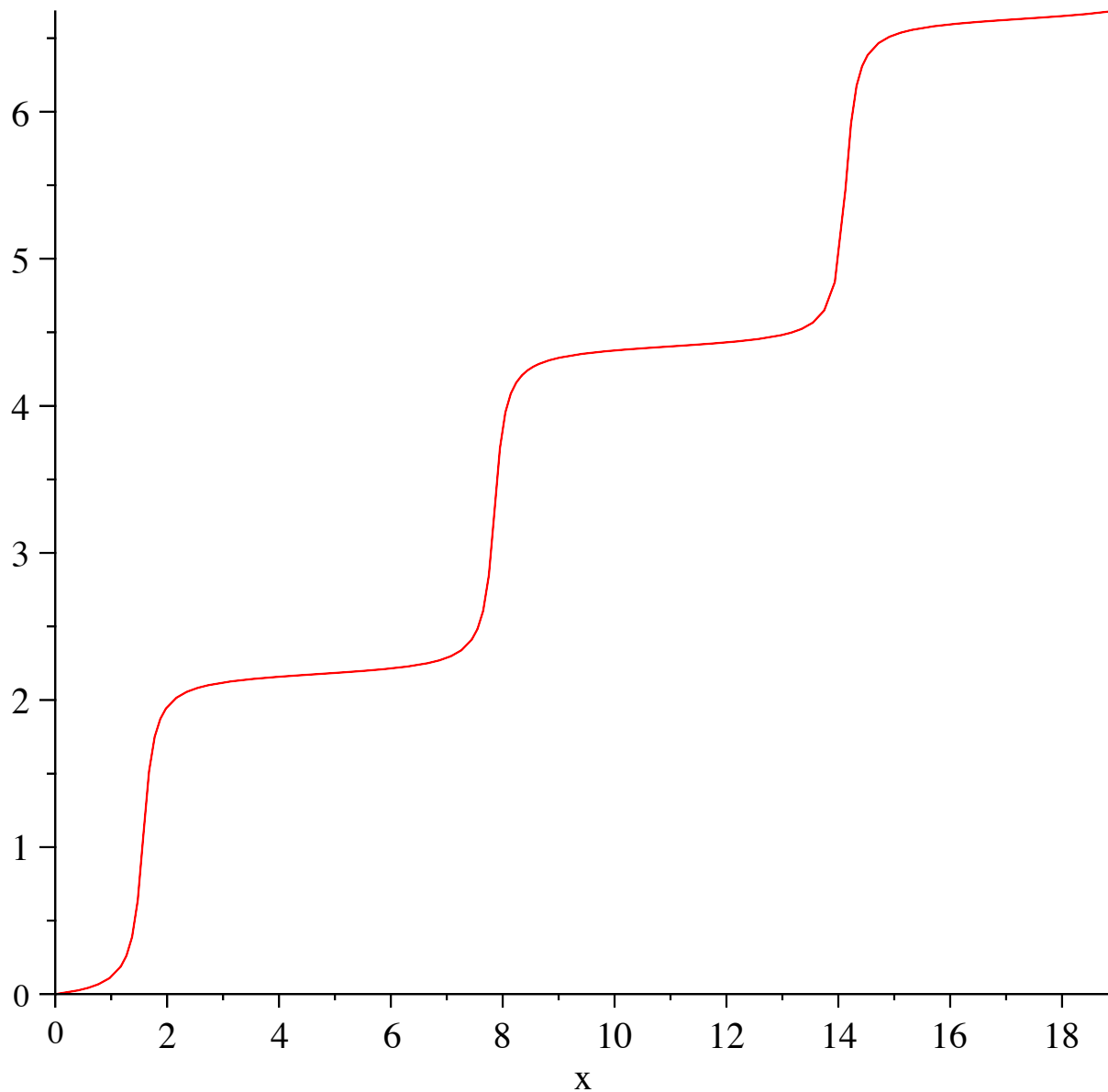


```

> F:=x->int(f, 0..x);
                                     F:=x->int(f,0..x)
> plot(F(x),x=0..6*Pi); # Schon besser

```

(4)



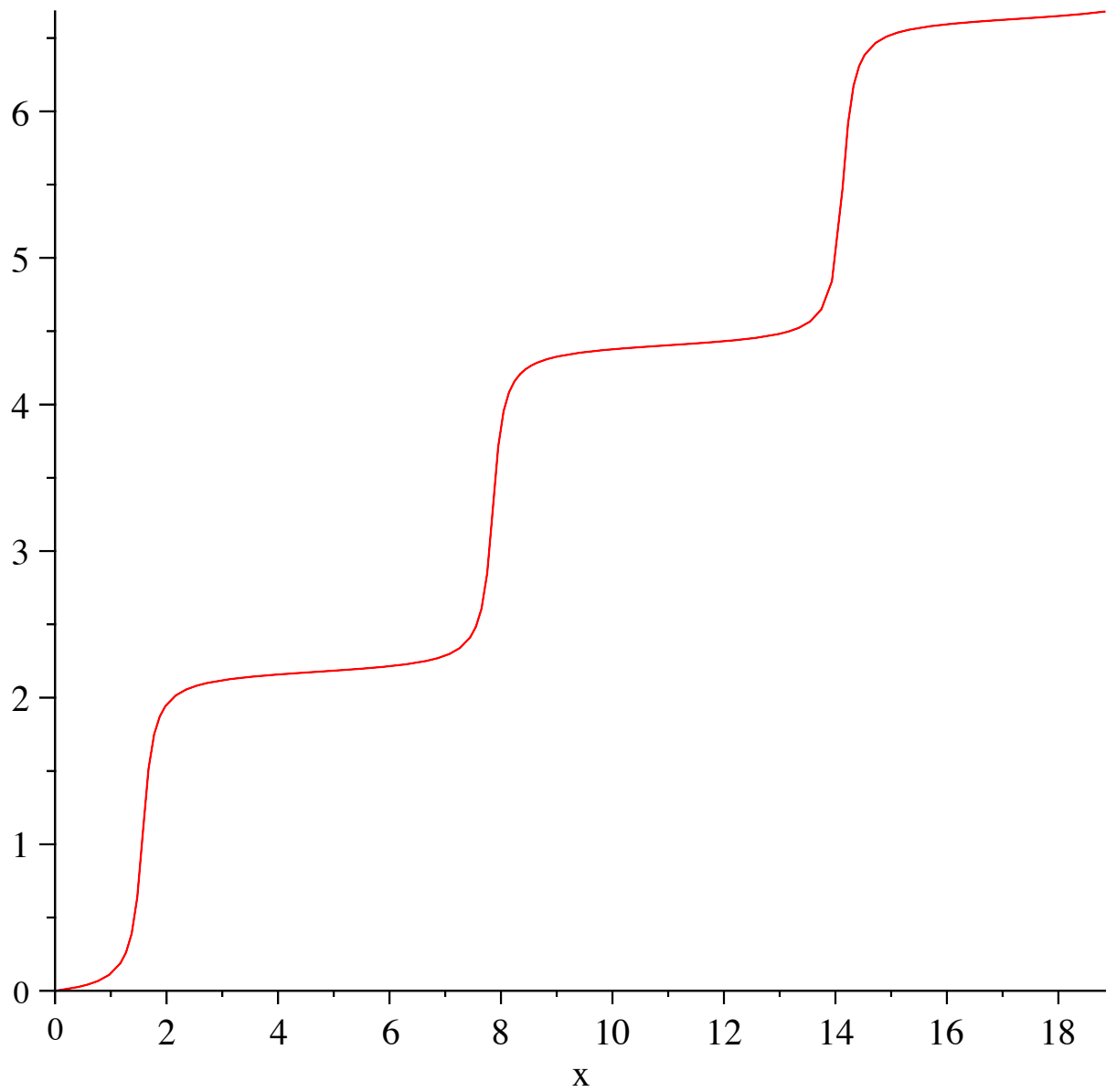
```
> s := limit(S(t), t=Pi,right) - limit(S(t), t=Pi,left) ; #  
Sprunghoehe
```

$$s := -\frac{10\sqrt{199}\pi}{199} \quad (5)$$

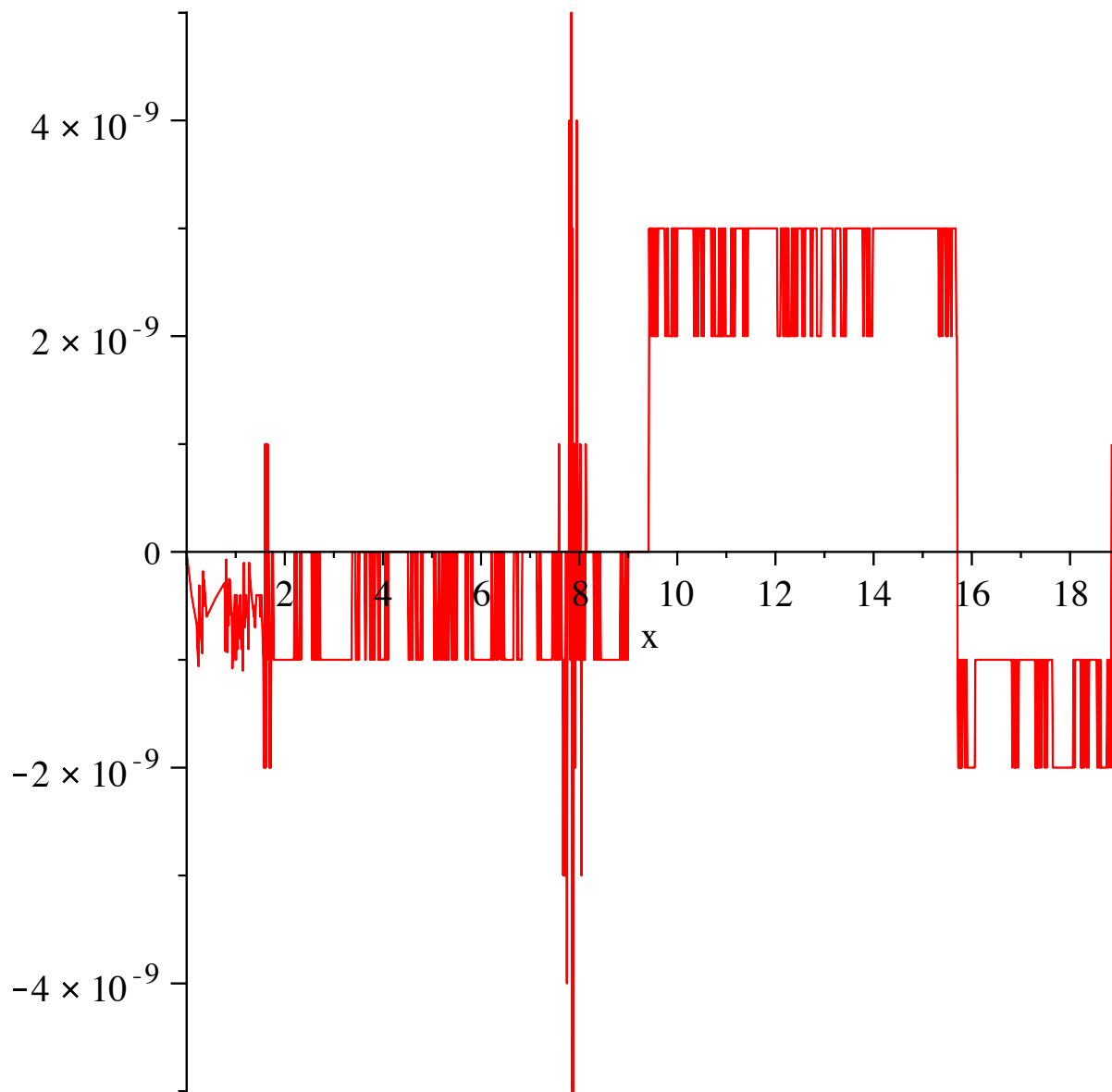
```
> S2 := x -> S(x) - S(0) - s*(floor(x/Pi)-floor(x/(2*Pi))); #  
Spruenge addieren
```

$$S2 := x \rightarrow S(x) - S(0) - s \left( \text{floor}\left(\frac{x}{\pi}\right) - \text{floor}\left(\frac{1}{2} \frac{x}{\pi}\right) \right) \quad (6)$$

```
> plot(S2(x), x=0..6*Pi);
```



```
> plot(S2(x)-F(x),x=0..6*Pi);
```



> `int(arctan(x), x);`

$$x \arctan(x) - \frac{1}{2} \ln(1+x^2)$$

(7)