```
> with(plots):
> expsums[0] := 1;
```

$$expsums_0 := 1 \tag{1}$$

```
> for n from 1 to 5 do expsums[n] := 1+int(expsums[n-1],x) end do;
```

$$expsums_1 := 1 + x$$

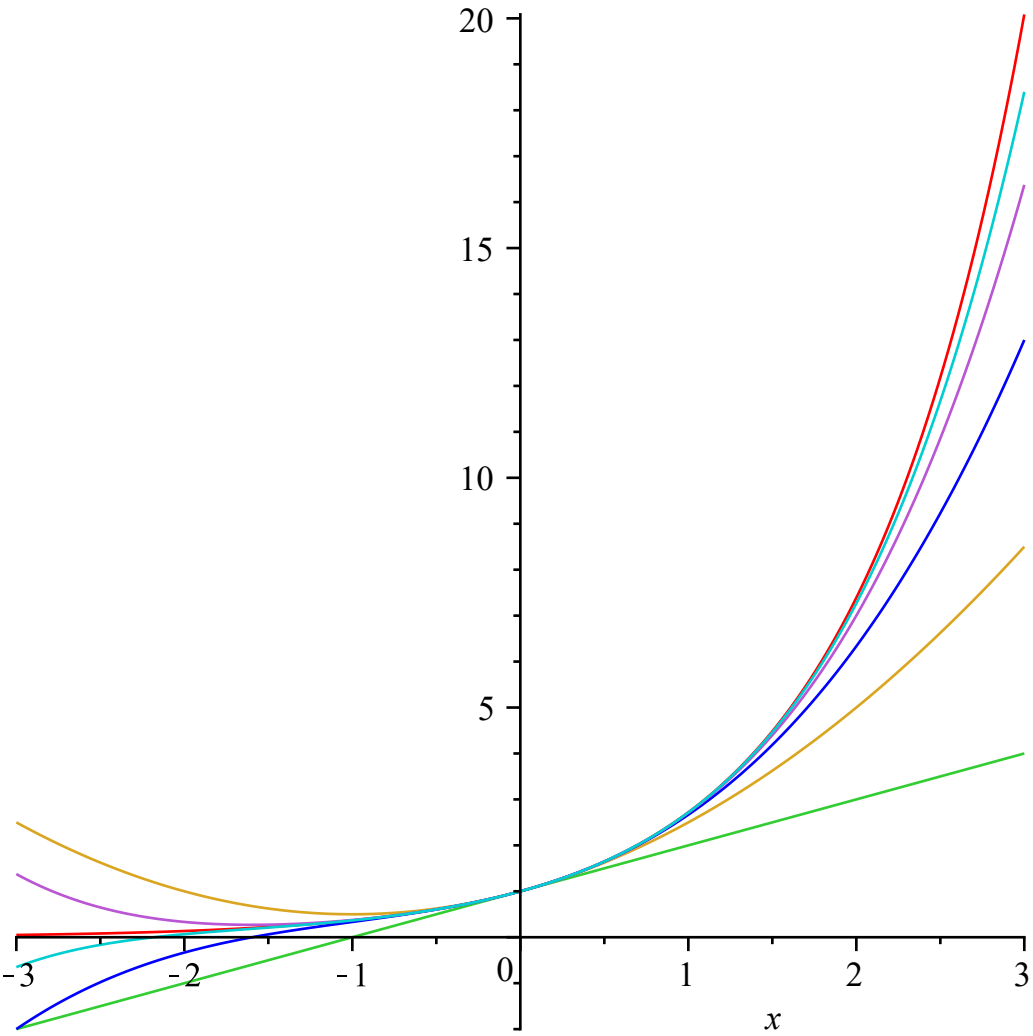
$$expsums_2 := 1 + x + \frac{1}{2} x^2$$

$$expsums_3 := 1 + x + \frac{1}{2} x^2 + \frac{1}{6} x^3$$

$$expsums_4 := 1 + x + \frac{1}{2} x^2 + \frac{1}{6} x^3 + \frac{1}{24} x^4$$

$$expsums_5 := 1 + x + \frac{1}{2} x^2 + \frac{1}{6} x^3 + \frac{1}{24} x^4 + \frac{1}{120} x^5 \tag{2}$$

```
> plot([exp(x),seq(expsums[n],n=1..5)],x = -3..3);
```



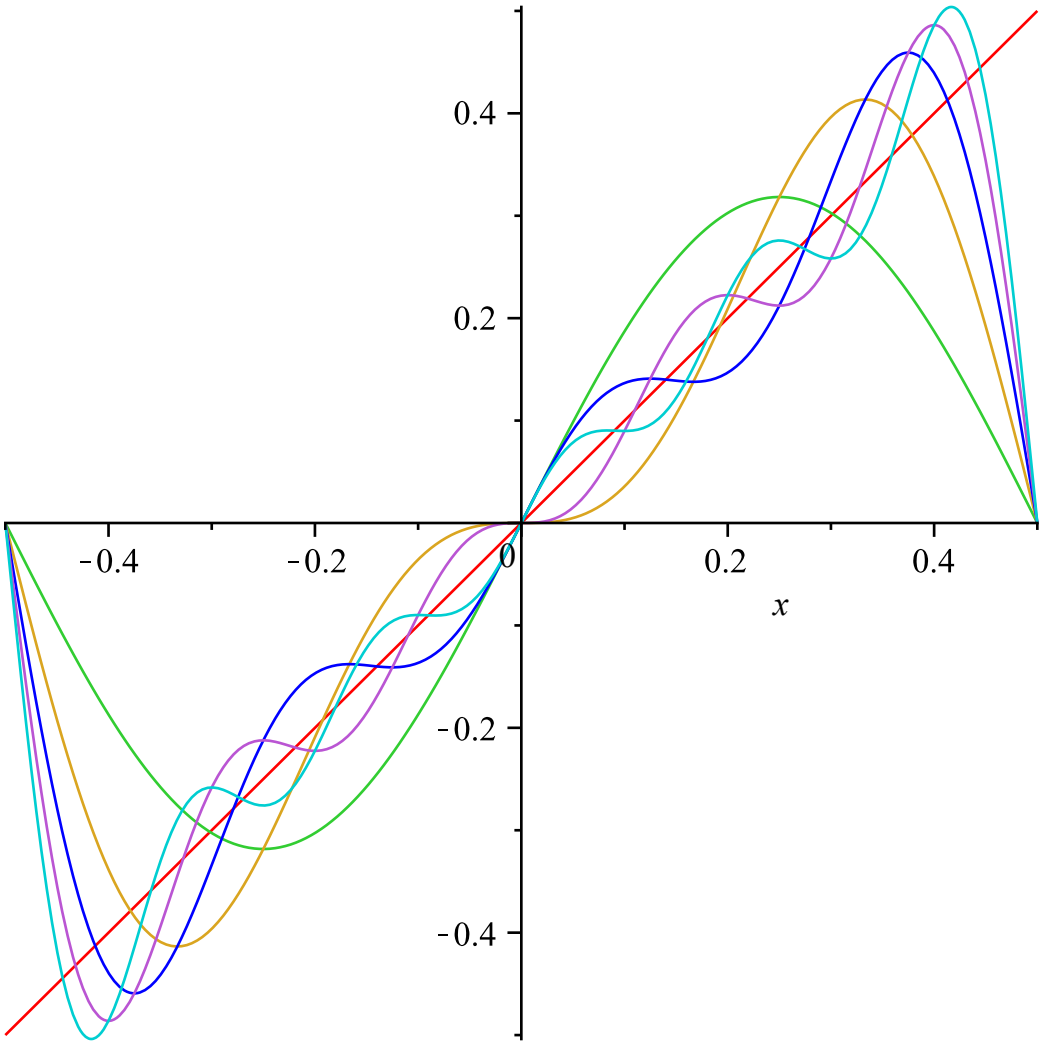

```
> fsums[1] := sin(2*Pi*x)/Pi;
```

$$fsums_1 := \frac{\sin(2\,\pi\,x)}{\pi} \tag{3}$$

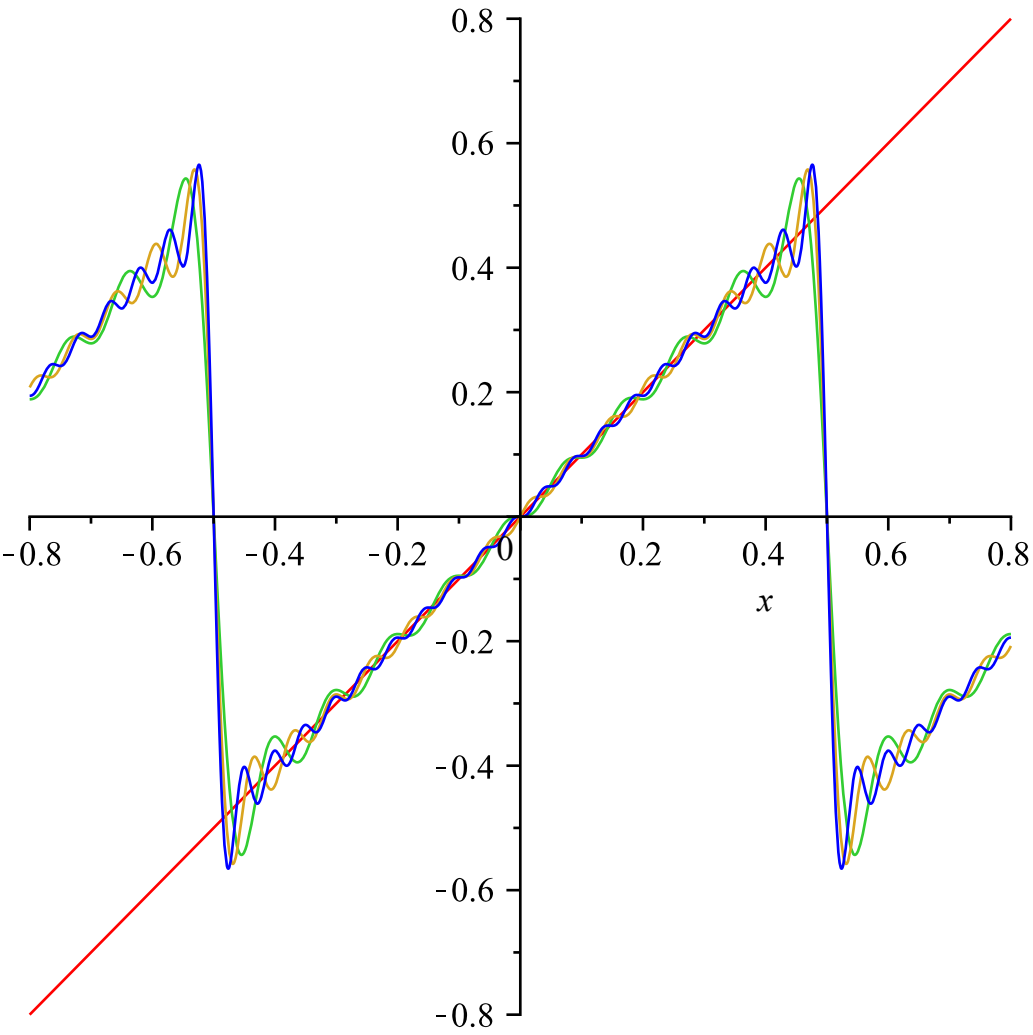
```
> for n from 2 to 50 do fsums[n] := fsums[n-1]+(-1)^(n+1)*sin(2*Pi*
  n*x)/(n*Pi) end do:
> fsums[20];
```

$$\frac{\sin(2\pi x)}{\pi} - \frac{1}{2}\frac{\sin(4\pi x)}{\pi} + \frac{1}{3}\frac{\sin(6\pi x)}{\pi} - \frac{1}{4}\frac{\sin(8\pi x)}{\pi} + \frac{1}{5}\frac{\sin(10\pi x)}{\pi} - \frac{1}{6}\frac{\sin(12\pi x)}{\pi} + \frac{1}{7}\frac{\sin(14\pi x)}{\pi} - \frac{1}{8}\frac{\sin(16\pi x)}{\pi} + \frac{1}{9}\frac{\sin(18\pi x)}{\pi} - \frac{1}{10}\frac{\sin(20\pi x)}{\pi} + \frac{1}{11}\frac{\sin(22\pi x)}{\pi} - \frac{1}{12}\frac{\sin(24\pi x)}{\pi} + \frac{1}{13}\frac{\sin(26\pi x)}{\pi} - \frac{1}{14}\frac{\sin(28\pi x)}{\pi} + \frac{1}{15}\frac{\sin(30\pi x)}{\pi} - \frac{1}{16}\frac{\sin(32\pi x)}{\pi} + \frac{1}{17}\frac{\sin(34\pi x)}{\pi} - \frac{1}{18}\frac{\sin(36\pi x)}{\pi} + \frac{1}{19}\frac{\sin(38\pi x)}{\pi} - \frac{1}{20}\frac{\sin(40\pi x)}{\pi} \quad \textbf{(4)}$$

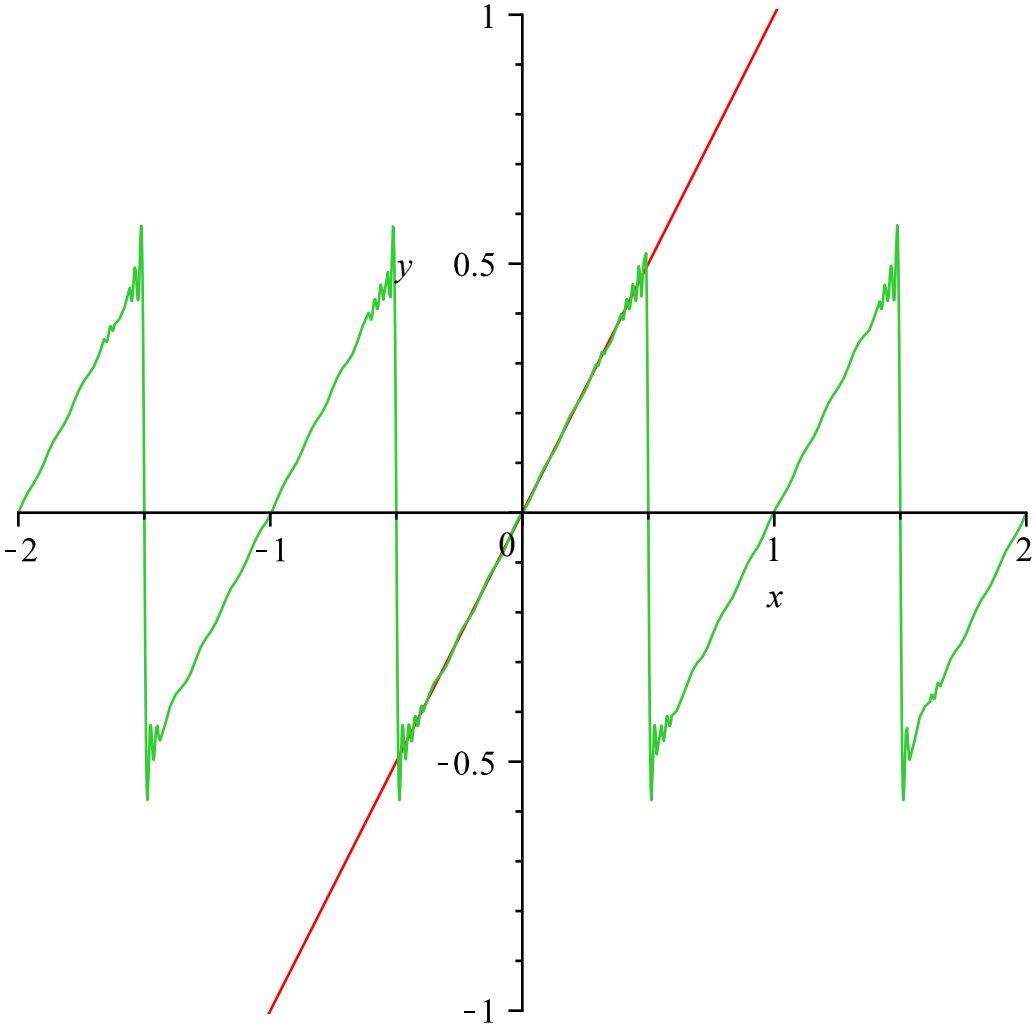
```
> plot([x,seq(fsums[n],n=1..5)],x = -0.5..0.5);
```




```
> plot([x,seq(fsums[5+5*n],n=1..3)],x = -0.8..0.8);
```




```
> plot([x,fsums[40]],x = -2..2, y=-1..1);
```

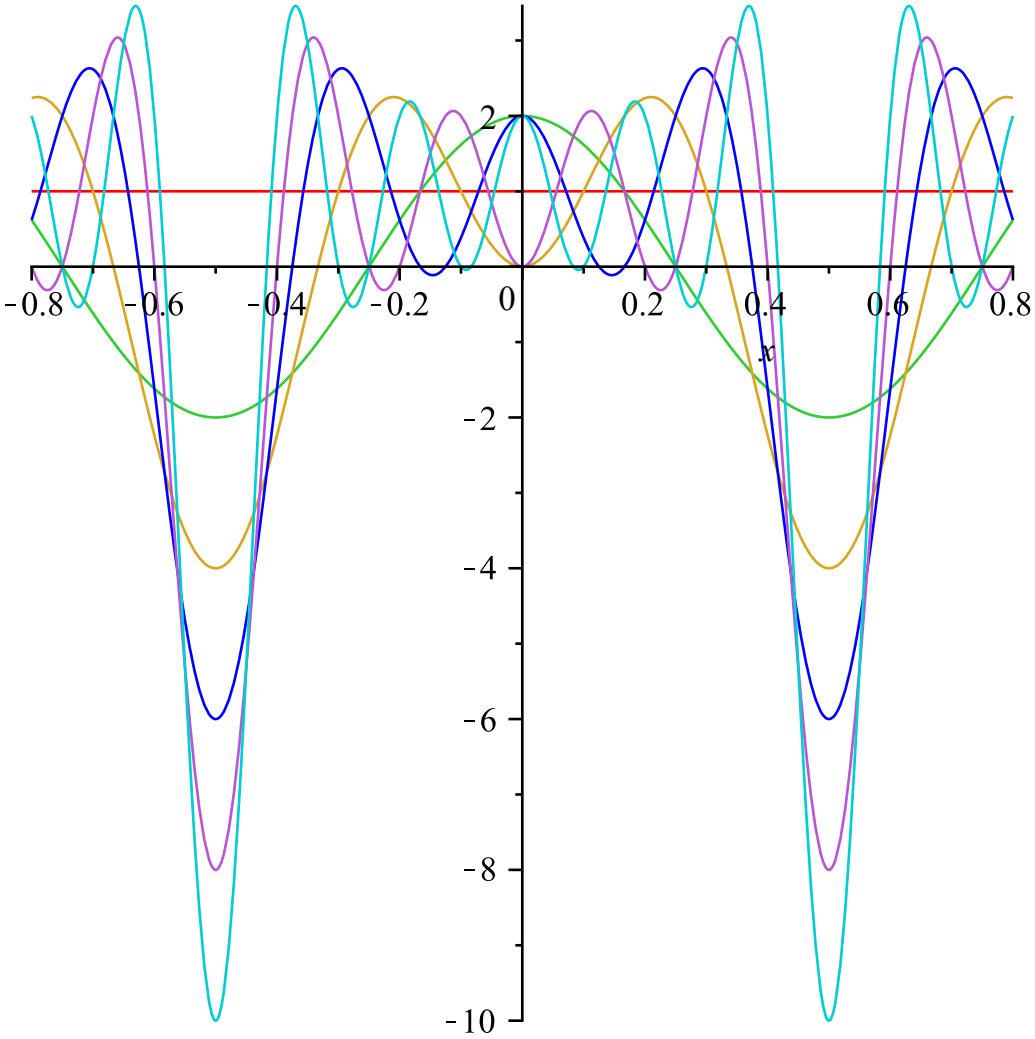



```
> for n from 1 to 50 do fprimesums[n] := diff(fsums[n],x) end do:
```

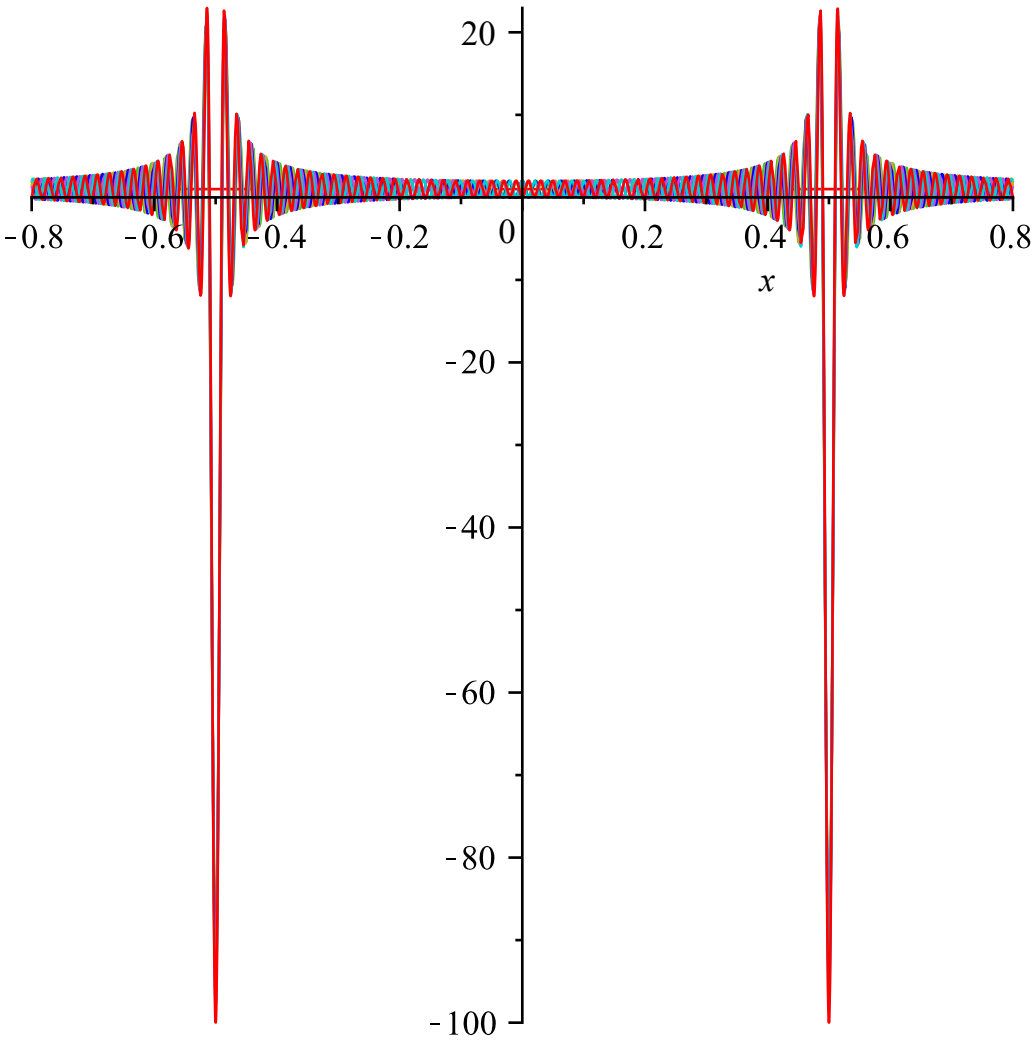
```
> fprimesums[20];
```

$$2\cos(2\pi x) - 2\cos(4\pi x) + 2\cos(6\pi x) - 2\cos(8\pi x) + 2\cos(10\pi x) - 2\cos(12\pi x) \quad \textbf{(5)}$$
$$+ 2\cos(14\pi x) - 2\cos(16\pi x) + 2\cos(18\pi x) - 2\cos(20\pi x) + 2\cos(22\pi x)$$
$$- 2\cos(24\pi x) + 2\cos(26\pi x) - 2\cos(28\pi x) + 2\cos(30\pi x) - 2\cos(32\pi x)$$
$$+ 2\cos(34\pi x) - 2\cos(36\pi x) + 2\cos(38\pi x) - 2\cos(40\pi x)$$

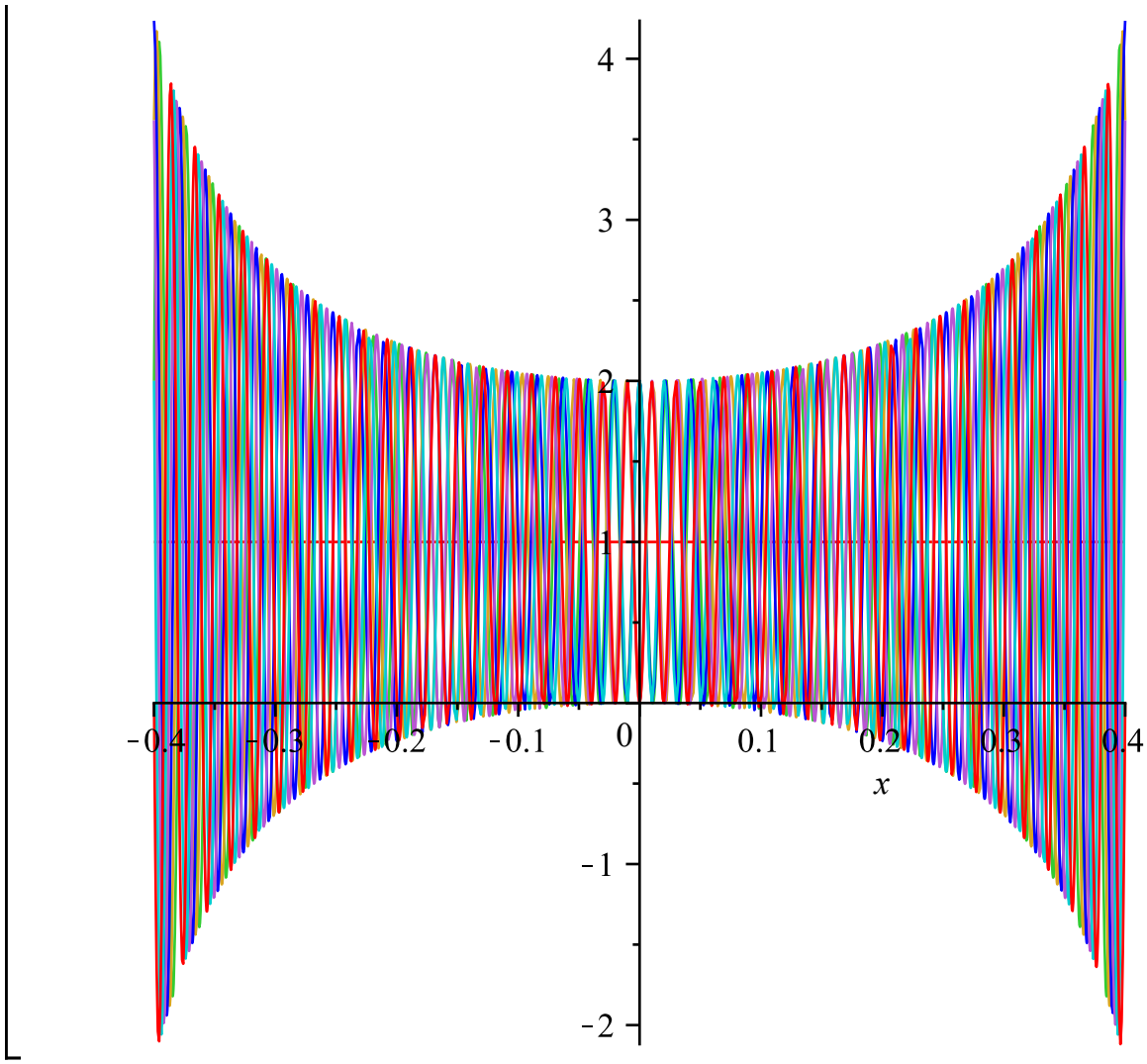
```
> plot([1,seq(fprimesums[n],n=1..5)],x = -0.8..0.8);
```




```
> plot([1,seq(fprimesums[n],n=45..50)],x = -0.8..0.8);
```




```
> plot([1,seq(fprimesums[n],n=45..50)],x = -0.4..0.4);
```


4
3
2
1
-1
-2
-0.4
-0.3
-0.2
-0.1
0
0.1
0.2
0.3
0.4
x