```
>
```

Lämmönjohtumisesimerkki

```
> alpha:=1.14;l:=10:
```

$$\alpha := 1.14$$

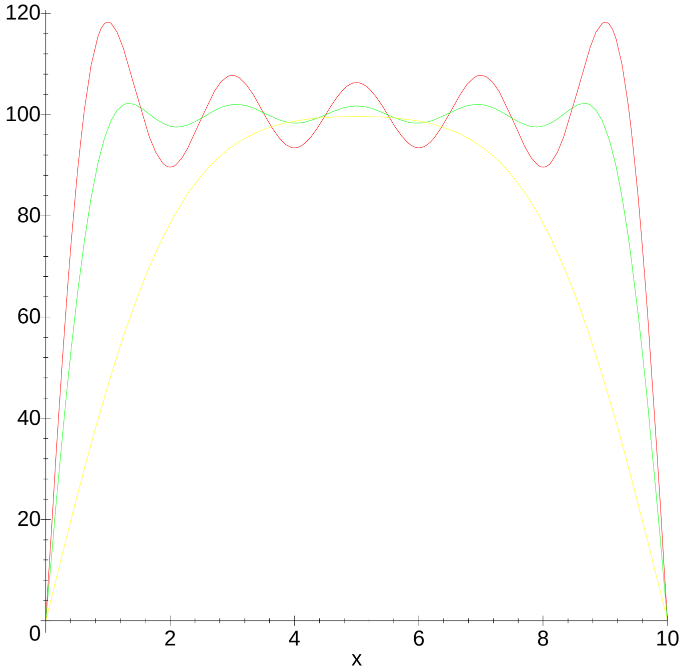
```
> lambda:=(2*k-1)*Pi*alpha/l;
```

$$\lambda := .1140000000\,(2\,k-1)\,\pi$$

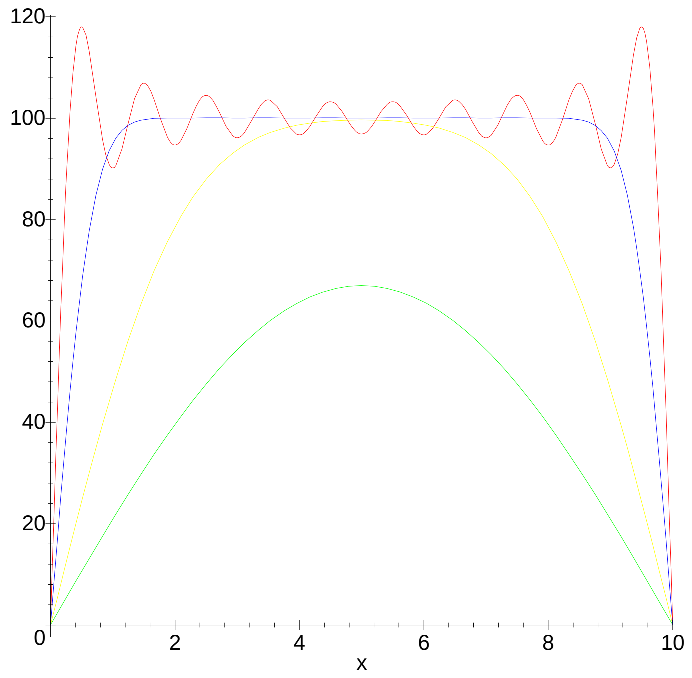
```
> u:=(x,t,N)->(400/Pi)*sum((1/(2*k-1))*sin((2*k-1)*Pi*x/l)*exp(-(
  lambda^2)*t),k=1..N);
```

$$u := (x, t, N) \rightarrow 400\,\frac{\displaystyle\sum_{k=1}^{N} \frac{\sin\left(\frac{(2\,k-1)\,\pi\,x}{l}\right)\mathbf{e}^{(-\lambda^2\,t)}}{2\,k-1}}{\pi}$$

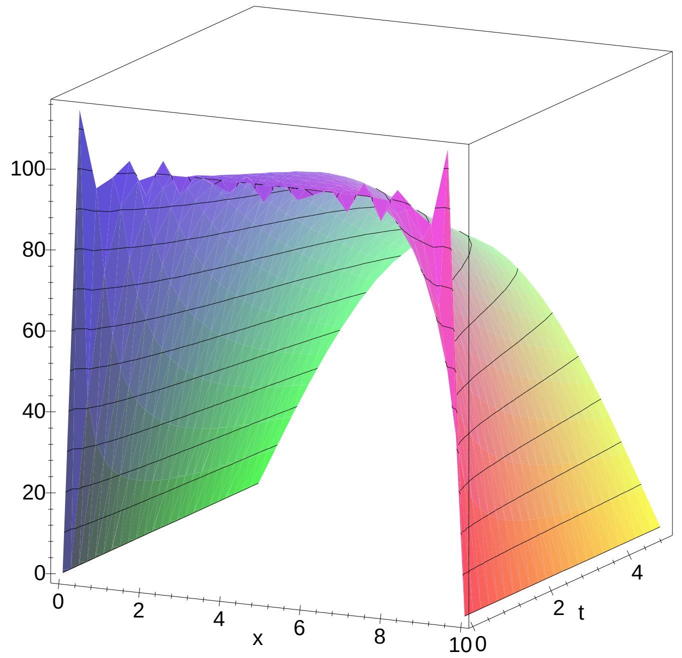
```
> plot({u(x,0,5),u(x,0.1,5),u(x,1,5)},x=0..l);
```




```
> plot({u(x,0,10),u(x,0.1,10),u(x,1,10),u(x,5,10)},x=0..l);
```




```
> ?plot
> plot3d(u(x,t,10),x=0..l,t=0..5);
```




```
>
```