```
> restart; with(plots) : with(PDEtools) : with(plottools);
```

[*arc*, *arrow*, *circle*, *cone*, *cuboid*, *curve*, *cutin*, *cutout*, *cylinder*, *disk*, *dodecahedron*, *ellipse*, *ellipticArc*, *hemisphere*, *hexahedron*, *homothety*, *hyperbola*, *icosahedron*, *line*, *octahedron*, *parallelepiped*, *pieslice*, *point*, *polygon*, *project*, *rectangle*, *reflect*, *rotate*, *scale*, *semitorus*, *sphere*, *stellate*, *tetrahedron*, *torus*, *transform*, *translate*] **(1)**

```
>
>
>
> k := piecewise(x < 0.15, 100, 0.15 ≤ x < 0.3, 0.2, 100)
```

$$k := \begin{cases} 100 & x < 0.15 \\ 0.2 & 0.15 \le x \text{ and } x < 0.3 \\ 100 & otherwise \end{cases} \quad \textbf{(2)}$$

```
> X := x/k
```

$$X := \frac{x}{\begin{cases} 100 & x < 0.15 \\ 0.2 & 0.15 \le x \text{ and } x < 0.3 \\ 100 & otherwise \end{cases}} \quad \textbf{(3)}$$

```
>
> PDE := 1000·1200 ∂/∂t T(X, t) = k·( ∂^2/∂X^2 T(X, t) )
```

Error, invalid input: diff received x/piecewise(x < .15, 100, .15 <= x and x < .3, .2, 100), which is not valid for its 2nd argument

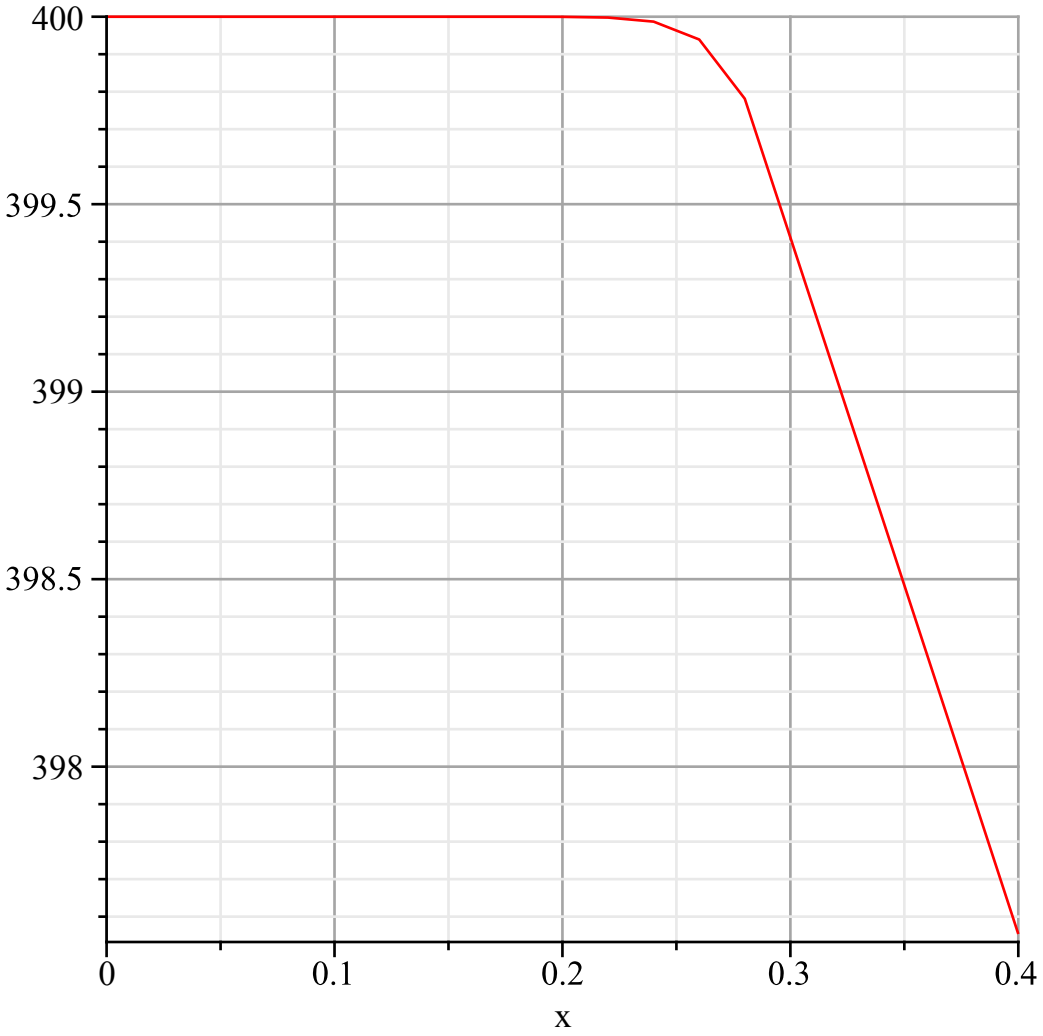
```
>
> IBC := {T(x, 0) = 400, T(0, t) = 400, 40. D_1(T)(0.4, t) = 2.(25 − T(0.4, t))}
```

$$IBC := \{40.\, D_1(T)(0.4, t) = 50. - 2.\, T(0.4, t),\ T(0, t) = 400,\ T(x, 0) = 400\} \quad \textbf{(4)}$$

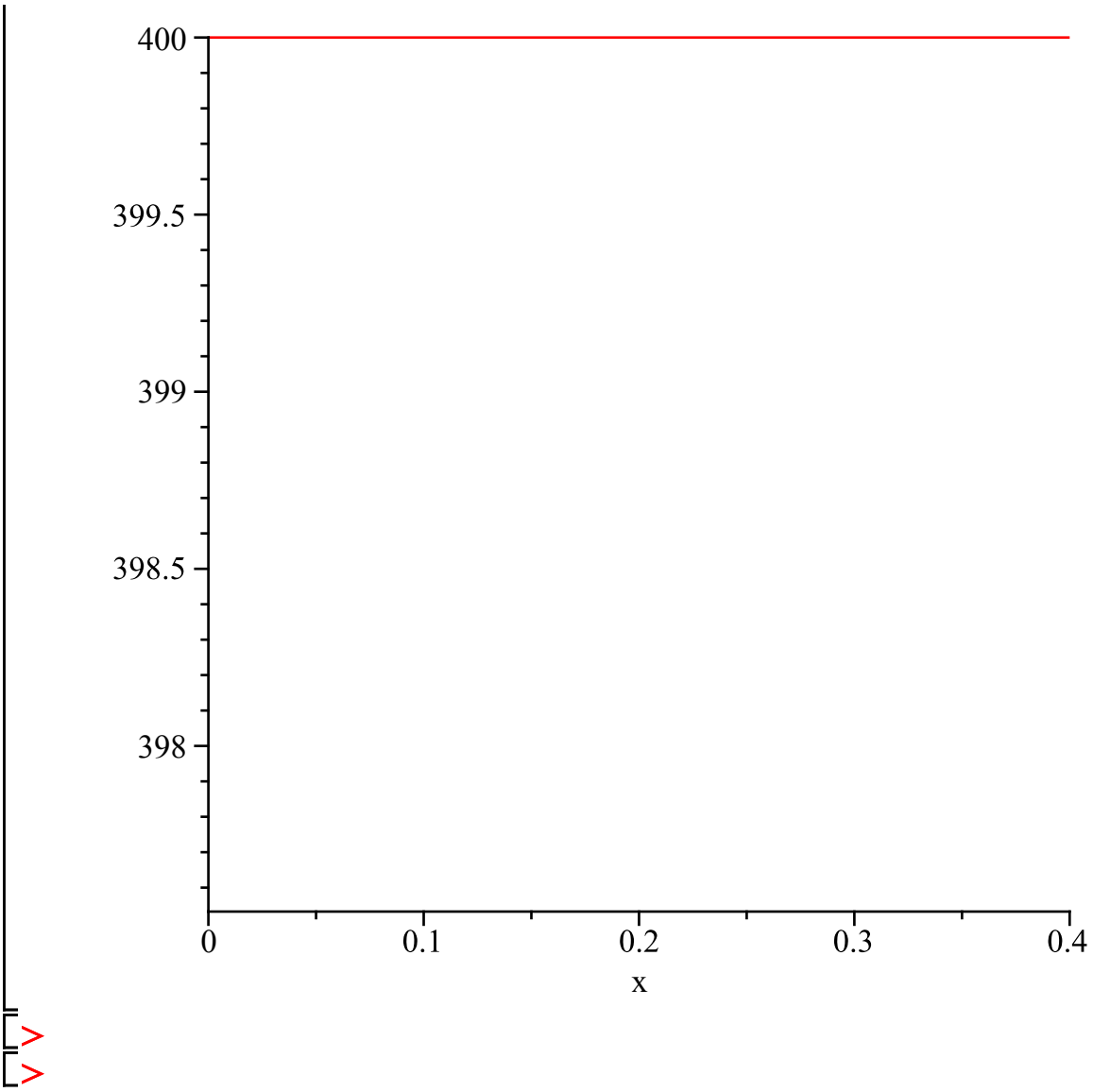
```
> sol := pdsolve(PDE, IBC, numeric)
```

*sol* := **module**( ) **export** *plot*, *plot3d*, *animate*, *value*, *settings*; ... **end module** **(5)**

```
>
> p1 := sol:-plot(t = 2000, gridlines = true) :
> display(p1)
```




> $sol$:-$animate(t = 2000, frames = 60)$;


400
399.5
399
398.5
398
0
0.1
0.2
0.3
0.4
x