```
> restart
> Ecuacion := diff(v(t), t) = -K·v(t)··2
```

$$Ecuacion := \frac{d}{dt} v(t) = -K\, v(t)^2 \tag{1}$$

```
> Condicion := v(0) = 200
```

$$Condicion := v(0) = 200 \tag{2}$$

```
> SolucionParticular := dsolve({Ecuacion, Condicion})
```

$$SolucionParticular := v(t) = \frac{200}{1 + 200\, K\, t} \tag{3}$$

```
> EcuacionDos := diff(x(t), t) = rhs(SolucionParticular)
```

$$EcuacionDos := \frac{d}{dt} x(t) = \frac{200}{1 + 200\, K\, t} \tag{4}$$

```
> CondicionInicial := x(0) = 0
```

$$CondicionInicial := x(0) = 0 \tag{5}$$

```
> SolucionRecorrido := dsolve({EcuacionDos, CondicionInicial})
```

$$SolucionRecorrido := x(t) = \frac{\ln(1 + 200\, K\, t)}{K} \tag{6}$$

```
> TiempoFinal := solve(rhs(SolucionRecorrido) = 1/10, t)
```

$$TiempoFinal := \frac{1}{200}\, \frac{e^{\frac{1}{10} K} - 1}{K} \tag{7}$$

```
> SolucionParticular
```

$$v(t) = \frac{200}{1 + 200\, K\, t} \tag{8}$$

```
> Parametro := solve(subs(t = TiempoFinal, rhs(SolucionParticular) = 20), K); evalf(%)
```

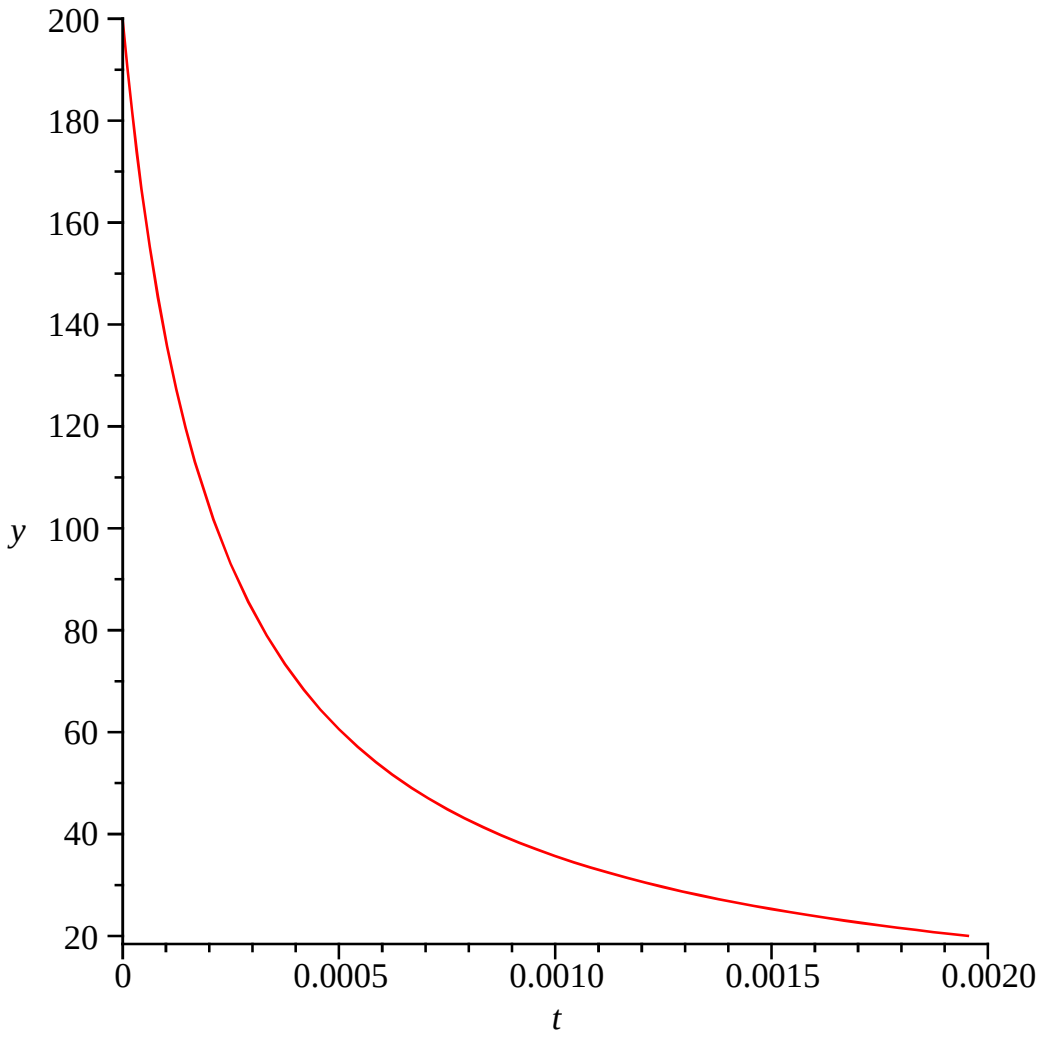
$$Parametro := 10 \ln(10)$$

$$23.02585093 \tag{9}$$

```
> SolucionFinal := subs(K = Parametro, SolucionParticular)
```

$$SolucionFinal := v(t) = \frac{200}{1 + 2000 \ln(10)\, t} \tag{10}$$

```
> plot(rhs(SolucionFinal), t = 0..0.002, y = 20..200)
```



> $TiempoTraspaso := subs(K = Parametro, TiempoFinal) : evalf(\%)$

$$0.001954325169 \quad \textbf{(11)}$$

> $NuevoTiempo := solve(rhs(SolucionFinal) = 10, t); evalf(\%)$

$$NuevoTiempo := \frac{19}{2000 \ln(10)}$$

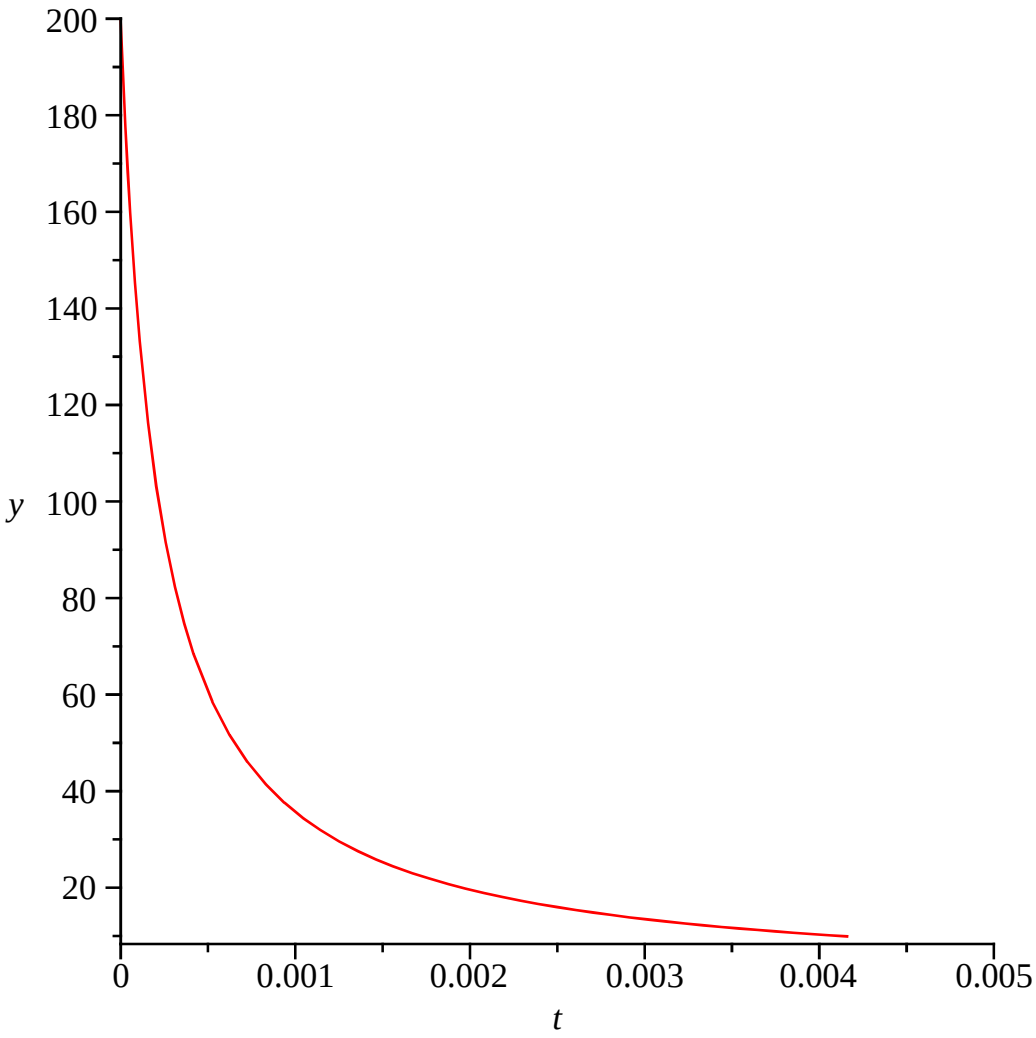
$$0.004125797578 \quad \textbf{(12)}$$

> $GruesoNuevo := subs(t = NuevoTiempo, K = Parametro, rhs(SolucionRecorrido)); evalf(\%)$

$$GruesoNuevo := \frac{1}{10} \frac{\ln(20)}{\ln(10)}$$

$$0.1301029996 \quad \textbf{(13)}$$

> $plot(rhs(SolucionFinal), t = 0..0.005, y = 10..200)$


200
180
160
140
120
y 100
80
60
40
20
0
0.001
0.002
0.003
0.004
0.005
t