```
> restart
> FF := s/(s^^2+9)^^2
```

$$FF := \frac{s}{(s^2+9)^2} \tag{1}$$

```
> with(inttrans):
> ff := invlaplace(FF, s, t)
```

$$ff := \frac{1}{6}\, t \sin(3\,t) \tag{2}$$

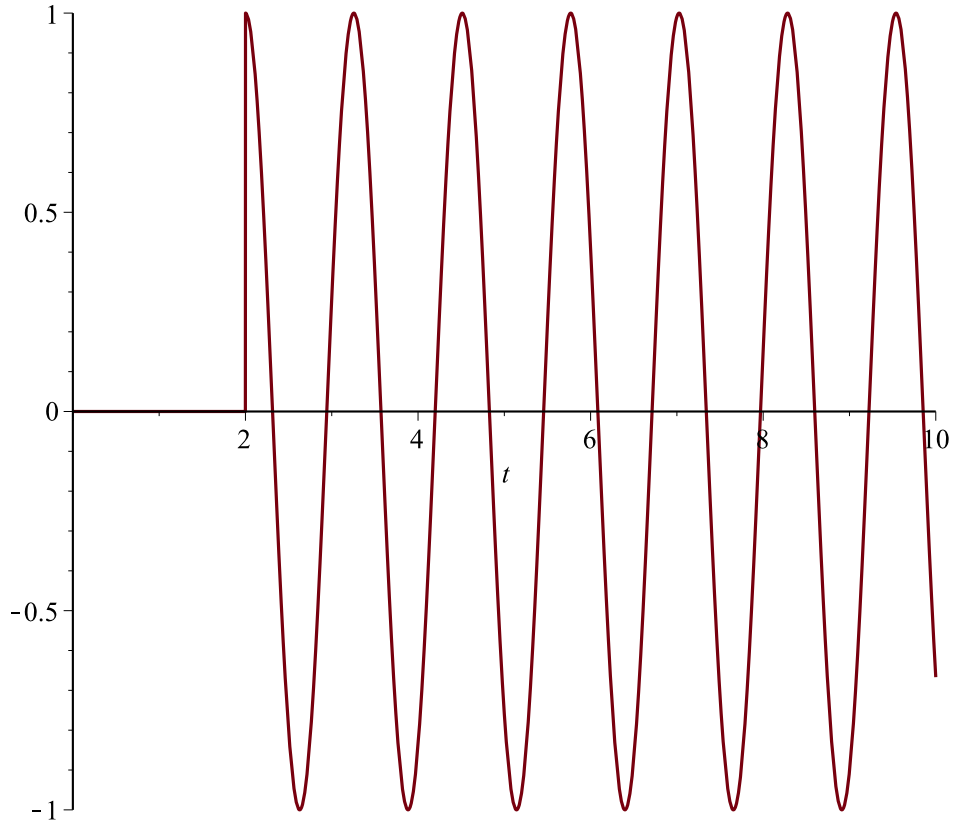
```
> GG := exp(-2*s)*s/(s^^2+25)
```

$$GG := \frac{e^{-2s}\, s}{s^2+25} \tag{3}$$

```
> gg := invlaplace(GG, s, t)
```

$$gg := \text{Heaviside}(t-2)\, \cos(5\,t-10) \tag{4}$$

```
> plot(gg, t=0..10)
```

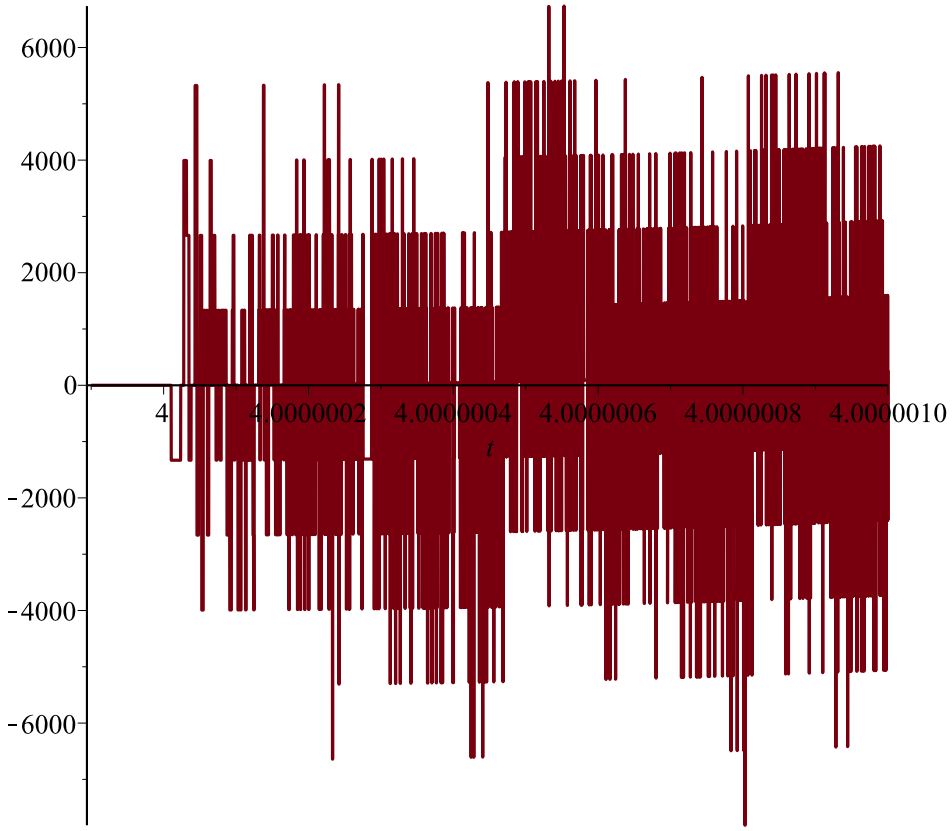



```
> restart
```

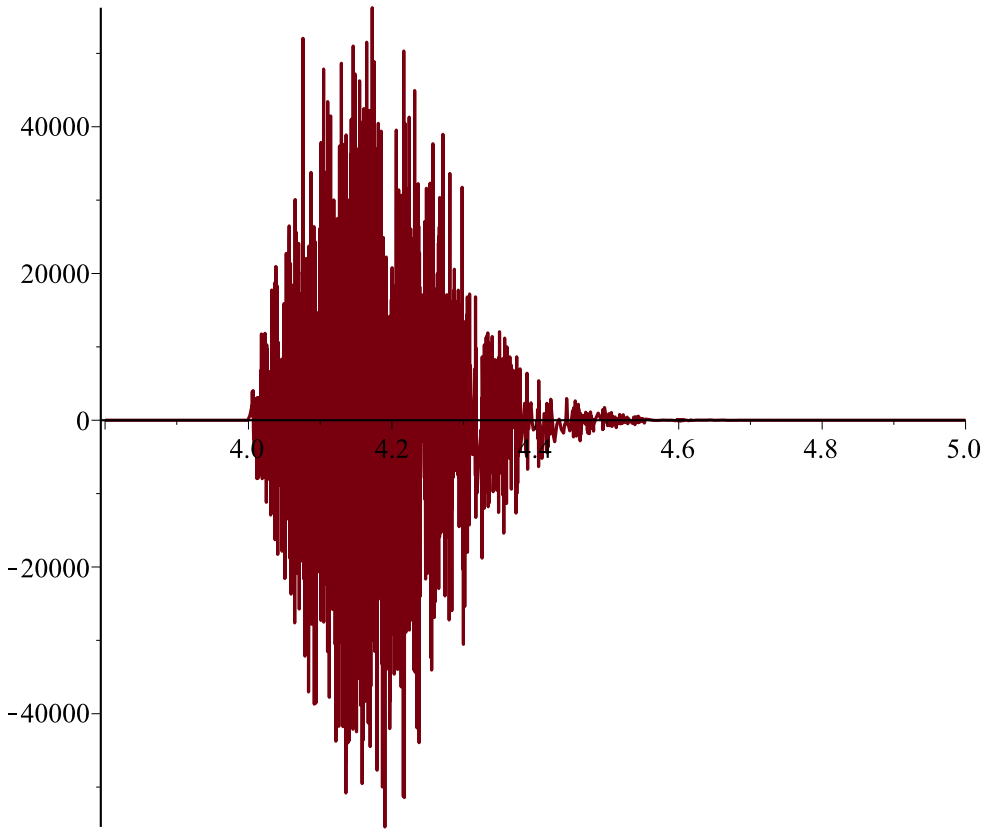
```
> with(inttrans) :
> SolTrans := Y = 117/8 · ( exp(-4 ·s)·s / ((s··2 + 3600)·(s + 5/8)) )
```

$$SolTrans := Y = \frac{117}{8}\ \frac{e^{-4s}\,s}{\left(s^2+3600\right)\left(s+\frac{5}{8}\right)} \qquad \textbf{(5)}$$

```
> SolPart := y = simplify(invlaplace(rhs(SolTrans), s, t)) :
> plot(rhs(SolPart), t = 3.9999999 ..4.000001)
```




```
>
```




```
> restart
> Ecua := diff(x(t), t$2) + 4·diff(x(t), t) + 4·x(t) = 8·exp(-2·t)
```

$$Ecua := \frac{d^2}{dt^2} x(t) + 4 \left(\frac{d}{dt} x(t) \right) + 4\, x(t) = 8\, e^{-2\,t} \tag{6}$$

```
> CondIni := x(0) = 1, D(x)(0) = 1
```

$$CondIni := x(0) = 1,\ D(x)(0) = 1 \tag{7}$$

```
> with(inttrans)
```

$$[addtable, fourier, fouriercos, fouriersin, hankel, hilbert, invfourier, invhilbert, invlaplace, invmellin, laplace, mellin, savetable] \tag{8}$$

```
> EcuaTrans := subs(CondIni, laplace(Ecua, t, s))
```

$$EcuaTrans := s^2\, laplace(x(t), t, s) - 5 - s + 4\, s\, laplace(x(t), t, s) + 4\, laplace(x(t), t, s) = \frac{8}{s+2} \tag{9}$$

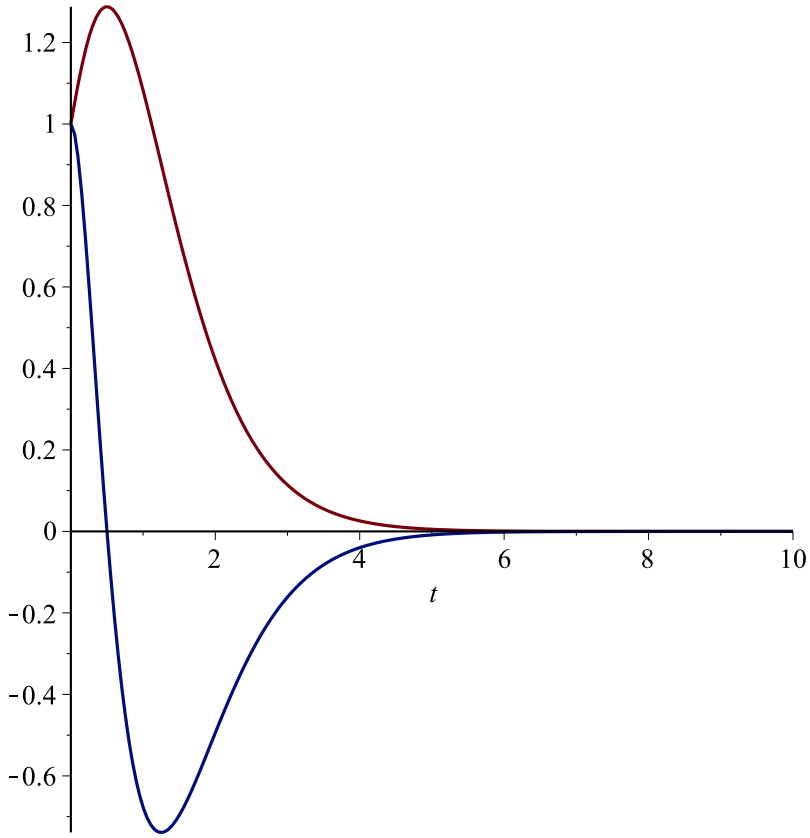
```
> SolTrans := isolate(EcuaTrans, laplace(x(t), t, s))
```

$$SolTrans := laplace(x(t), t, s) = \frac{\frac{8}{s+2} + s + 5}{s^2 + 4\,s + 4} \tag{10}$$

```
> SolPart := invlaplace(SolTrans, s, t)
```

$$SolPart := x(t) = \left(4\,t^2 + 3\,t + 1\right)\,e^{-2\,t} \tag{11}$$

```
> plot([rhs(SolPart), rhs(diff(SolPart, t))], t = 0..10)
```




```
> restart
> Sist := diff(x(t), t) = 2·x(t) + 3·y(t), diff(y(t), t) = x(t) − y(t)
```

$$Sist := \frac{d}{dt}\,x(t) = 2\,x(t) + 3\,y(t),\ \frac{d}{dt}\,y(t) = x(t) - y(t) \tag{12}$$

```
> Cond := x(0) = 5, y(0) = -4
```

$$Cond := x(0) = 5,\ y(0) = -4 \tag{13}$$

```
> SolPart := dsolve({Sist, Cond}) :
> SolPart[1] : evalf(%, 3)
```

$$x(t) = 1.52\,e^{2.79\,t} + 3.48\,e^{-1.79\,t} \tag{14}$$

```
> SolPart[2] : evalf(%, 3)
```

$$y(t) = 0.400\,e^{2.79\,t} - 4.40\,e^{-1.79\,t} \tag{15}$$

```
> restart
>
>
>
```