```
> restart
> f := 1
```
$$f := 1 \tag{1}$$

```
> with(inttrans)
```
$$[addtable, fourier, fouriercos, fouriersin, hankel, hilbert, invfourier, invhilbert, invlaplace, \tag{2}$$
$$invmellin, laplace, mellin, savetable, setup]$$

```
> F := laplace(f, t, s)
```
$$F := \frac{1}{s} \tag{3}$$

```
> g := t
```
$$g := t \tag{4}$$

```
> G := laplace(g, t, s)
```
$$G := \frac{1}{s^2} \tag{5}$$

```
> h := exp(5·t)
```
$$h := e^{5t} \tag{6}$$

```
> H := laplace(h, t, s)
```
$$H := \frac{1}{s-5} \tag{7}$$

```
> Ecua := y"-5·y'+6·y = 5·exp(x)
```
$$Ecua := \frac{d^2}{dx^2} y(x) - 5 \frac{d}{dx} y(x) + 6 y(x) = 5 e^x \tag{8}$$

```
> CondIni := y(0) = 3, D(y)(0) =-5
```
$$CondIni := y(0) = 3, D(y)(0) = -5 \tag{9}$$

```
> EcuaTL := laplace(Ecua, x, s)
```
$$EcuaTL := s^2 \mathcal{L}(y(x), x, s) - D(y)(0) - s y(0) - 5 s \mathcal{L}(y(x), x, s) + 5 y(0) + 6 \mathcal{L}(y(x), x, \tag{10}$$
$$s) = \frac{5}{s-1}$$

```
> EcuaTLDos := subs(CondIni, EcuaTL)
```
$$EcuaTLDos := s^2 \mathcal{L}(y(x), x, s) + 20 - 3 s - 5 s \mathcal{L}(y(x), x, s) + 6 \mathcal{L}(y(x), x, s) = \frac{5}{s-1} \tag{11}$$

```
> SolTL := isolate(EcuaTLDos, laplace(y(x), x, s))
```
$$SolTL := \mathcal{L}(y(x), x, s) = \frac{\frac{5}{s-1} + 3 s - 20}{s^2 - 5 s + 6} \tag{12}$$

```
> SolPart := invlaplace(SolTL, s, x)
```
$$SolPart := y(x) = 9 e^{2x} + \frac{5 e^x}{2} - \frac{17 e^{3x}}{2} \tag{13}$$

```
> CondicionInicial := simplify(subs(x = 0, SolPart))
```
$$CondicionInicial := y(0) = 3 \tag{14}$$

```
> CondIniDer := D(y)(0) = simplify(subs(x = 0, rhs(diff(SolPart, x))))
```
$$CondIniDer := D(y)(0) = -5 \tag{15}$$

```
> Comprobar := simplify(eval(subs(y(x) = rhs(SolPart), lhs(Ecua) - rhs(Ecua) = 0)))
```

$$Comprobar := 0 = 0 \tag{16}$$

> *restart*

> $f := \cos(2 \cdot x)$

$$f := \cos(2\,x) \tag{17}$$

> *with(inttrans)* :

> $F := laplace(f, x, s)$

$$F := \frac{s}{s^2 + 4} \tag{18}$$

> $g := \sin(2 \cdot x)$

$$g := \sin(2\,x) \tag{19}$$

> $G := laplace(g, x, s)$

$$G := \frac{2}{s^2 + 4} \tag{20}$$

> $h := \exp(3 \cdot x) \cdot \cos(2 \cdot x)$

$$h := e^{3x} \cos(2\,x) \tag{21}$$

> $H := laplace(h, x, s)$

$$H := \frac{s - 3}{(s - 3)^2 + 4} \tag{22}$$

>