```
> restart
> f := 1
```
$$f := 1 \qquad\qquad (1)$$
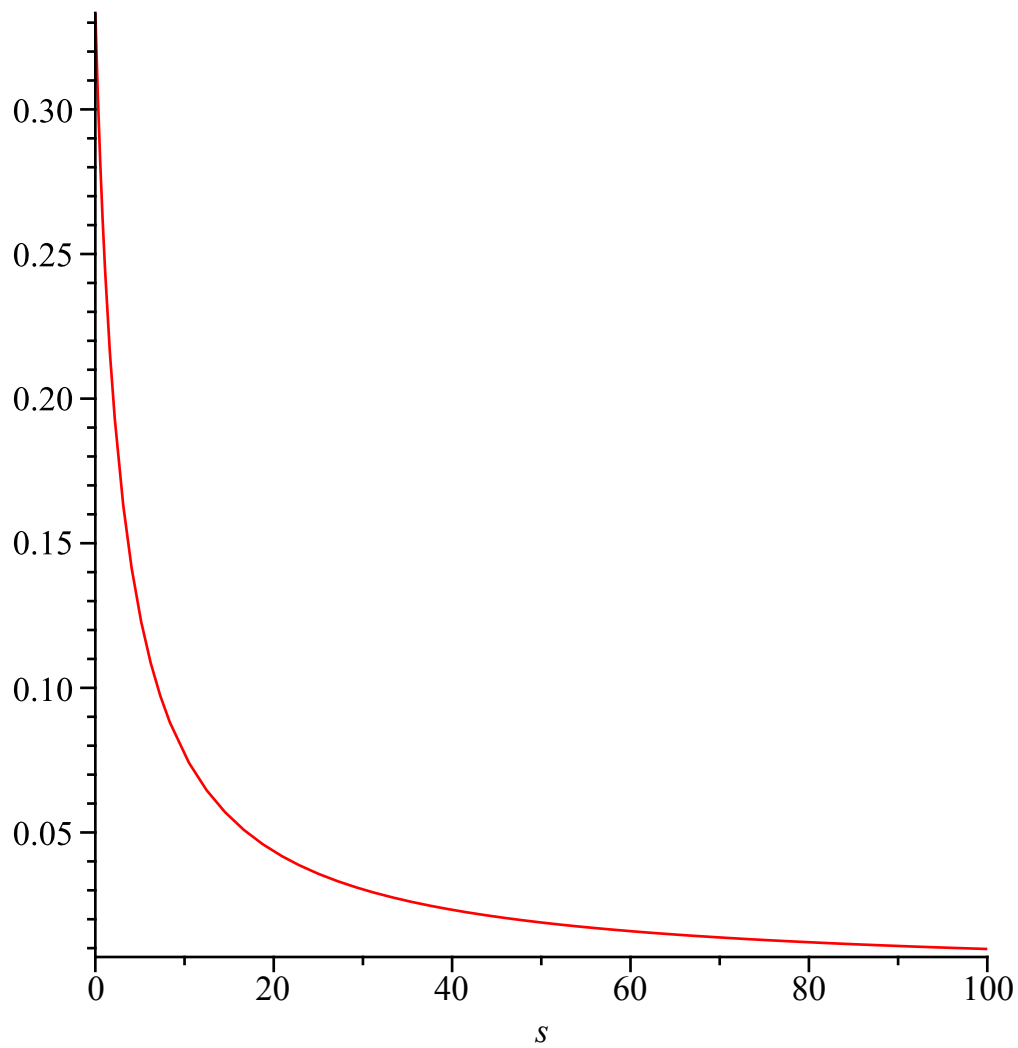
```
> with(inttrans)
```
$[addtable, fourier, fouriercos, fouriersin, hankel, hilbert, invfourier, invhilbert, invlaplace,$ $\qquad$ **(2)**
$\quad invmellin, laplace, mellin, savetable]$

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

```
> g := t
```
$$g := t \qquad\qquad (4)$$

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

```
> h := t··3
```
$$h := t^3 \qquad\qquad (6)$$

```
> H := laplace(h, t, s)
```
$$H := \frac{6}{s^4} \qquad\qquad (7)$$

```
> l := exp(-3·t)
```
$$l := e^{-3t} \qquad\qquad (8)$$

```
> L := laplace(l, t, s)
```
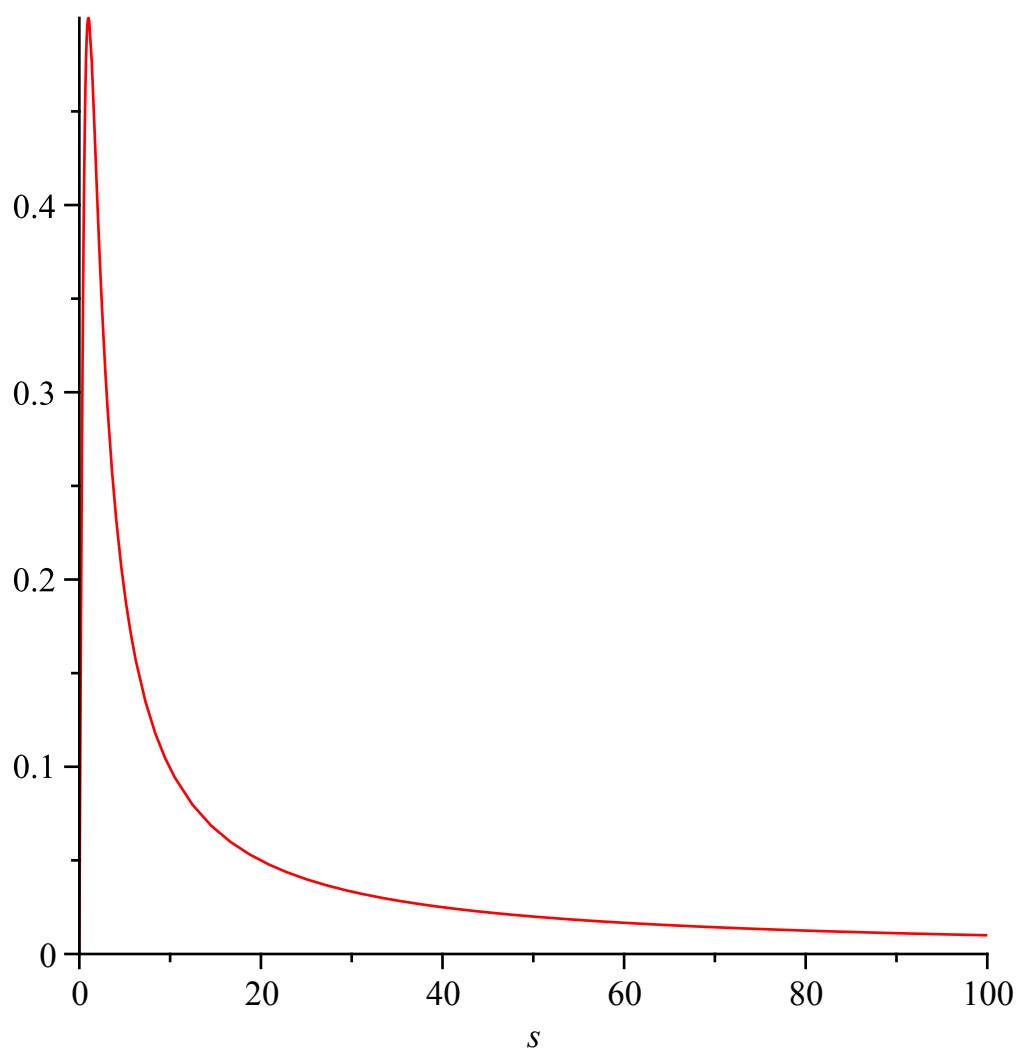$$L := \frac{1}{s+3} \qquad\qquad (9)$$

```
> plot(L, s = 0..100)
```

> $CS := laplace(\cos(b \cdot t), t, s)$

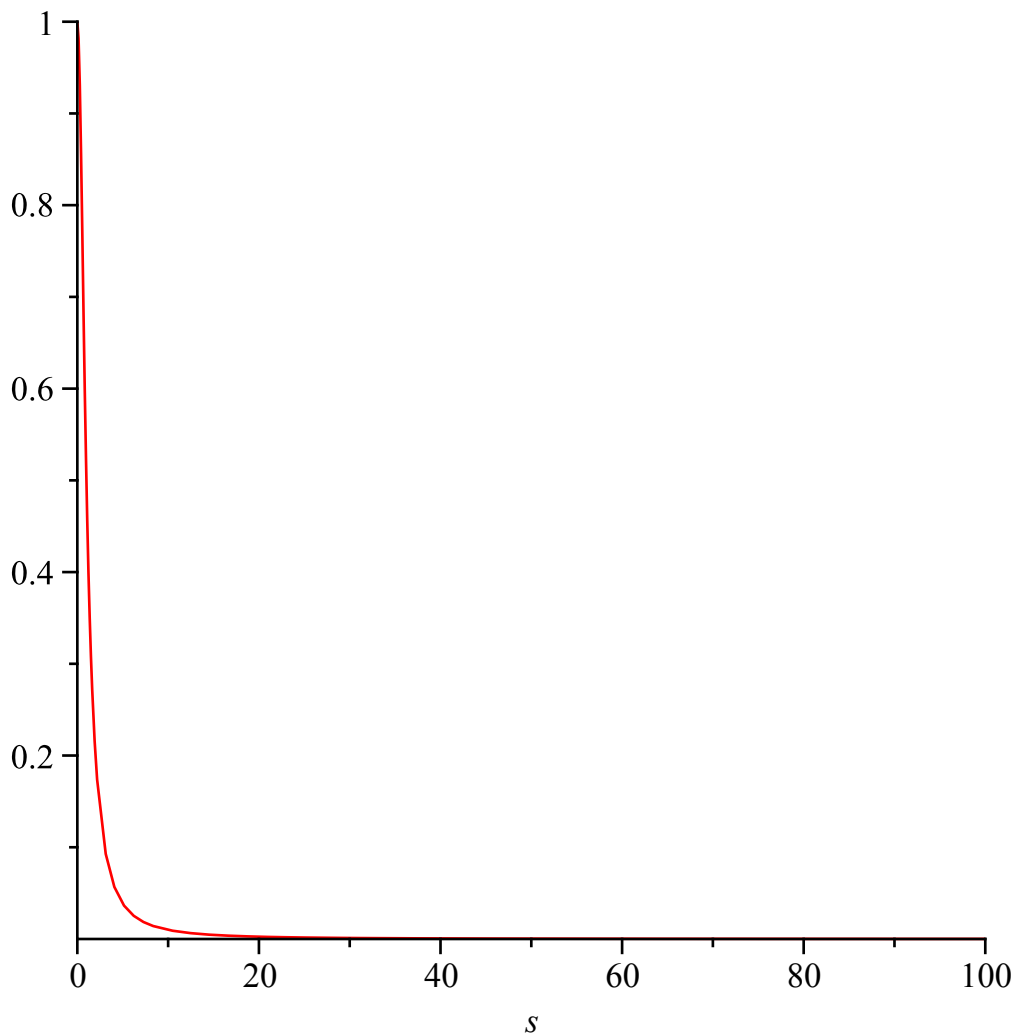$$CS := \frac{s}{s^2 + b^2}$$ **(10)**

> $plot(subs(b = 1, CS), s = 0 .. 100)$

> $SS := laplace(\sin(b \cdot t), t, s)$

$$SS := \frac{b}{s^2 + b^2} \qquad \textbf{(11)}$$

> $plot(subs(b = 1, SS), s = 0 .. 100)$

```
> restart
> Equation := diff(y(t), t$2) − 5 diff(y(t), t) + 6·y(t) = 0
```

$$Equation := \frac{d^2}{dt^2}\, y(t) - 5\left(\frac{d}{dt}\, y(t)\right) + 6\, y(t) = 0 \tag{12}$$

```
> InitCond := y(0) = 2, D(y)(0) = -2;
```

$$InitCond := y(0) = 2,\ D(y)(0) = -2 \tag{13}$$

```
> with(inttrans) :
> LapTransEq := subs(InitCond, laplace(Equation, t, s))
```

$$LapTransEq := s^2\, laplace(y(t), t, s) + 12 - 2\,s - 5\,s\, laplace(y(t), t, s) + 6\, laplace(y(t), t, s) = 0 \tag{14}$$

```
> LapTransPartSol := isolate(LapTransEq, laplace(y(t), t, s))
```

$$LapTransPartSol := laplace(y(t), t, s) = \frac{-12 + 2\,s}{s^2 - 5\,s + 6} \tag{15}$$

```
> ParticularSolution := invlaplace(LapTransPartSol, s, t)
```

$$ParticularSolution := y(t) = 8\, e^{2\,t} - 6\, e^{3\,t} \tag{16}$$

```
>
```