```
> restart
> F(s) := s··2 / (s··2 + 36)
```

$$F(s) := \frac{s^2}{s^2 + 36} \tag{1}$$

```
> with(inttrans) :
> f(t) := invlaplace(F(s), s, t)
```

$$f(t) := \text{Dirac}(t) - 6 \sin(6\,t) \tag{2}$$

```
> G(s) := 8/(s··3) + sqrt(2)/(s··5);
```

$$G(s) := \frac{8}{s^3} + \frac{\sqrt{2}}{s^5} \tag{3}$$

```
> g(t) := expand(invlaplace(G(s), s, t))
```

$$g(t) := 4\,t^2 + \frac{1}{24}\,\sqrt{2}\;t^4 \tag{4}$$

```
> restart
> Equation := diff(y(t), t$2) − 3·diff(y(t), t) + 2·y(t) = 0;
```

$$Equation := \frac{d^2}{dt^2}\,y(t) - 3\left(\frac{d}{dt}\,y(t)\right) + 2\,y(t) = 0 \tag{5}$$

```
> InitialCond := y(0) = 4, D(y)(0) = -5;
```

$$InitialCond := y(0) = 4,\ D(y)(0) = -5 \tag{6}$$

```
> with(inttrans) :
> LapTransEqua := subs(InitialCond, laplace(Equation, t, s))
```

$$LapTransEqua := s^2\,laplace(y(t), t, s) + 17 - 4\,s - 3\,s\,laplace(y(t), t, s) + 2\,laplace(y(t), t, s) = 0 \tag{7}$$

```
> LapTransSolution := isolate(LapTransEqua, laplace(y(t), t, s))
```

$$LapTransSolution := laplace(y(t), t, s) = \frac{-17 + 4\,s}{s^2 - 3\,s + 2} \tag{8}$$

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

$$ParticularSolution := y(t) = 13\,e^t - 9\,e^{2t} \tag{9}$$

```
>
>
>
```