

```

> restart;
> t0 := 1; T := 6;

                                t0 := 1
                                T := 6
(1)

> y0 := 10;

                                y0 := 10
(2)

> f1 := sin2(0.6·t)·exp( -t2 + 1.5 ·t);

                                f1 := sin(0.6 t)2 e-t2 + 1.5 t
(3)

> f2 := exp(t - 1.5);

                                f2 := et - 1.5
(4)

> g := 2 * (t - 2);

                                g := 2 t - 4
(5)

> zdr := {diff(y(t), t) - f1 * f2 + g * y(t) = 0};

                                zdr := {  $\frac{d}{dt} y(t) - \sin(0.6 t)^2 e^{-t^2 + 1.5 t} e^{t - 1.5} + (2 t - 4) y(t) = 0$  }
(6)

> pu := {y(t0) = y0};

                                pu := {y(1) = 10}
(7)

> s := dsolve(zdr union pu, {y(t)});

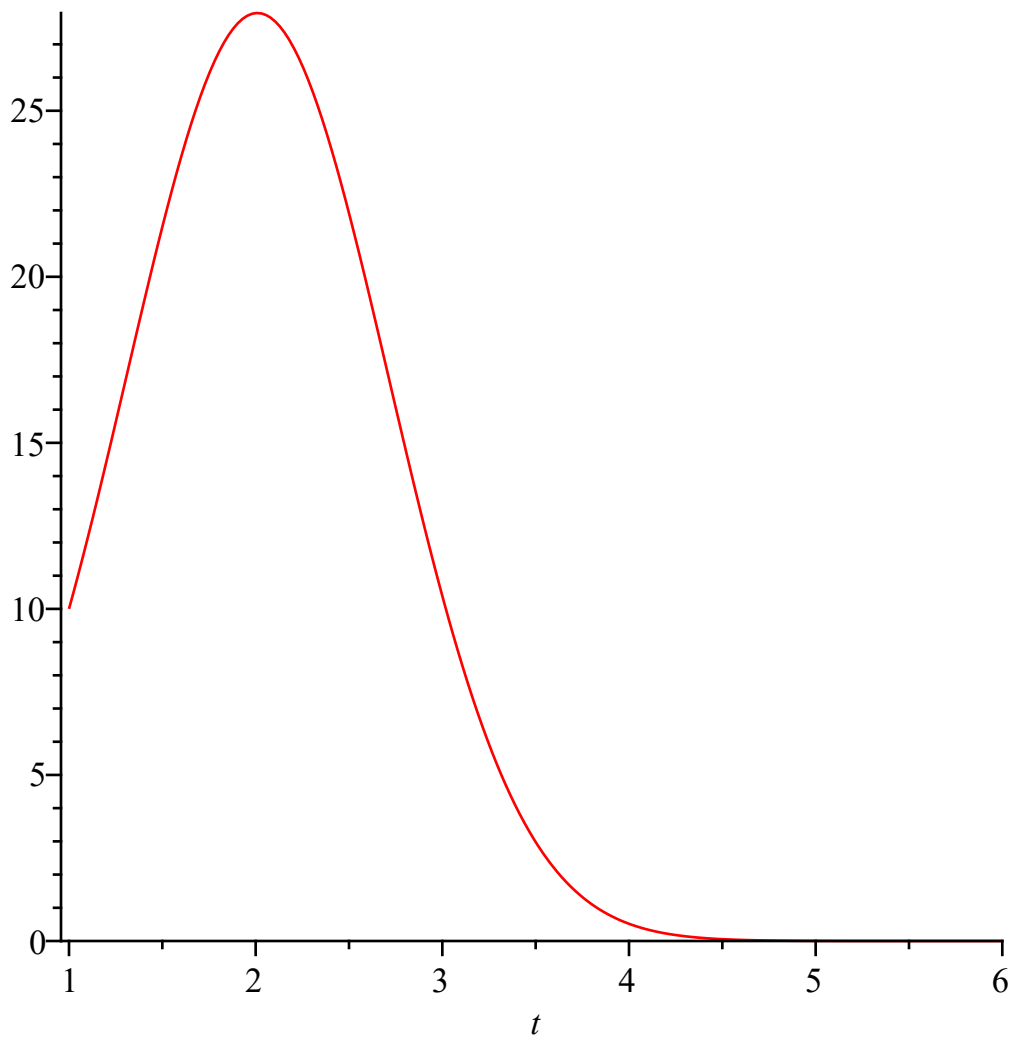
s := y(t) = -  $\frac{1}{3} e^{-t^2 + \frac{5}{2} t - \frac{3}{2}} + \frac{25}{123} e^{-t^2 + \frac{5}{2} t - \frac{3}{2}} \cos\left(\frac{6}{5} t\right) - \frac{20}{123} \sin\left(\frac{6}{5} t\right) e^{-t^2 + \frac{5}{2} t - \frac{3}{2}} - \frac{e^{-t^2 + 4t} \left( -\frac{31}{3} + \frac{25}{123} \cos\left(\frac{6}{5}\right) - \frac{20}{123} \sin\left(\frac{6}{5}\right) \right)}{e^3}$ 
(8)

> eval(y(t), s);

-  $\frac{1}{3} e^{-t^2 + \frac{5}{2} t - \frac{3}{2}} + \frac{25}{123} e^{-t^2 + \frac{5}{2} t - \frac{3}{2}} \cos\left(\frac{6}{5} t\right) - \frac{20}{123} \sin\left(\frac{6}{5} t\right) e^{-t^2 + \frac{5}{2} t - \frac{3}{2}} - \frac{e^{-t^2 + 4t} \left( -\frac{31}{3} + \frac{25}{123} \cos\left(\frac{6}{5}\right) - \frac{20}{123} \sin\left(\frac{6}{5}\right) \right)}{e^3}$ 
(9)

> plot(%, t = t0..T);

```



```
> y1 := unapply(%%, t);
```

$$y1 := t \rightarrow -\frac{1}{3} e^{-t^2 + \frac{5}{2}t - \frac{3}{2}} + \frac{25}{123} e^{-t^2 + \frac{5}{2}t - \frac{3}{2}} \cos\left(\frac{6}{5}t\right) - \frac{20}{123} \sin\left(\frac{6}{5}t\right) e^{-t^2 + \frac{5}{2}t - \frac{3}{2}} \quad (10)$$

$$- \frac{e^{-t^2 + 4t} \left( -\frac{31}{3} + \frac{25}{123} \cos\left(\frac{6}{5}\right) - \frac{20}{123} \sin\left(\frac{6}{5}\right) \right)}{e^3}$$

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> evalf(y1(t0));
```

10. (11)

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> evalf(y1(T));
```

0.000003184763467 (12)

```
[>
```