```
> restart:
```

Section 2.1 Example

$$\frac{dy}{dt} - 2\,t\,y = 1$$

General solution: $y(t) = e^{t^2}\left(\int_0^t e^{-s^2}\,ds\right) + C\,e^{t^2}$

```
> ysoln:=(t)->exp(t^2)*int(exp(-s^2),s = 0 .. t)+3*exp(t^2);
```

$$ysoln := t \mapsto e^{t^2}\left(\int_0^t e^{-s^2}\,ds\right) + 3\,e^{t^2} \tag{1}$$

Let's have Maple compute *y*(2):

```
> ysoln(2);
```

$$\frac{e^4\,\mathrm{erf}(2)\,\sqrt{\pi}}{2} + 3\,e^4 \tag{2}$$

Note that the answer is in terms of the error function, which is defined as $\mathrm{erf}(x) = \frac{2}{\pi}\int_0^x e^{-t^2}\,dt$

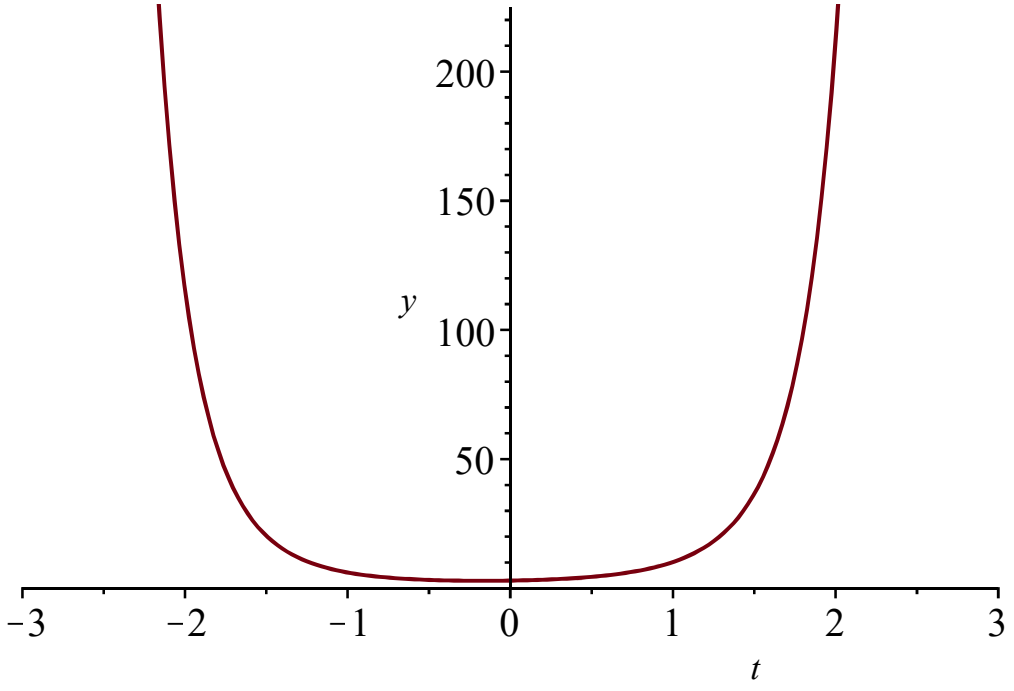
The error function is well-known and Maple can evaluate it, so a decimal approximation for *y*(2) is:

```
> evalf(ysoln(2));
```

$$211.9544622 \tag{3}$$

Maple can also plot curves involving integrals with a variable for one of the bounds:

```
> plot(ysoln(t),t=-3..3,y=0..225);
```



>

Just for reference, here's a plot of the error function, $f(x) = \mathrm{erf}(x)$:

```
> plot(erf(x),x=-3..3);
```