```
> de := diff(x(t), t) + x(t) = 2/sqrt(Pi) · exp(−t² − t);
```

$$de := \frac{d}{dt} x(t) + x(t) = \frac{2 e^{-t^2 - t}}{\sqrt{\pi}} \qquad (1)$$

```
> e := exp(int(1, t));
```

$$e := e^t \qquad (2)$$

```
>
> dsolve(de);
```

$$x(t) = (\mathrm{erf}(t) + \_C1) \, e^{-t} \qquad (3)$$

```
> integral := int(( 2/sqrt(Pi) ) · exp(−t² − t), t);
```

$$integral := e^{\frac{1}{4}} \, \mathrm{erf}\left(t + \frac{1}{2}\right) \qquad (4)$$

```
> ex2 := diff(x(t), t, t) + 3·diff(x(t), t) + x(t) = 1;
```

$$ex2 := \frac{d^2}{dt^2} x(t) + 3 \frac{d}{dt} x(t) + x(t) = 1 \qquad (5)$$

```
> sol := dsolve(ex2, x(t));
```

$$sol := x(t) = e^{\frac{(\sqrt{5} - 3) t}{2}} \, \_C2 + e^{-\frac{(3 + \sqrt{5}) t}{2}} \, \_C1 + 1 \qquad (6)$$

```
> s_sol := simplify(sol);
```

$$s\_sol := x(t) = e^{\frac{(\sqrt{5} - 3) t}{2}} \, \_C2 + e^{-\frac{(3 + \sqrt{5}) t}{2}} \, \_C1 + 1 \qquad (7)$$

```
> lim := limit(sol, t = infinity);
```

$$lim := \lim_{t \to \infty} x(t) = 1 \qquad (8)$$

```
> ex3 := diff(x(t), t$2) + 4 x(t) = 1
```

$$ex3 := \frac{d^2}{dt^2} x(t) + 4 x(t) = 1 \qquad (9)$$

```
> cond := x(0) = 5/4, D(x)(0) = 0;
```

$$cond := x(0) = \frac{5}{4}, \mathrm{D}(x)(0) = 0 \qquad (10)$$

```
> solution := dsolve({ex3, cond}, x(t));
```

$$solution := x(t) = \frac{1}{4} + \cos(2 t) \qquad (11)$$

```
>
```