```
> restart
> Ecuacion := y"(t) + 2·y(t) = cos(2 t)
```

$$Ecuacion := D^{(2)}(y)(t) + 2\,y(t) = \cos(2\,t) \quad \textbf{(1)}$$

```
> y"(t) = -2·y(t) + cos(2 t)
```

$$D^{(2)}(y)(t) = -2\,y(t) + \cos(2\,t) \quad \textbf{(2)}$$

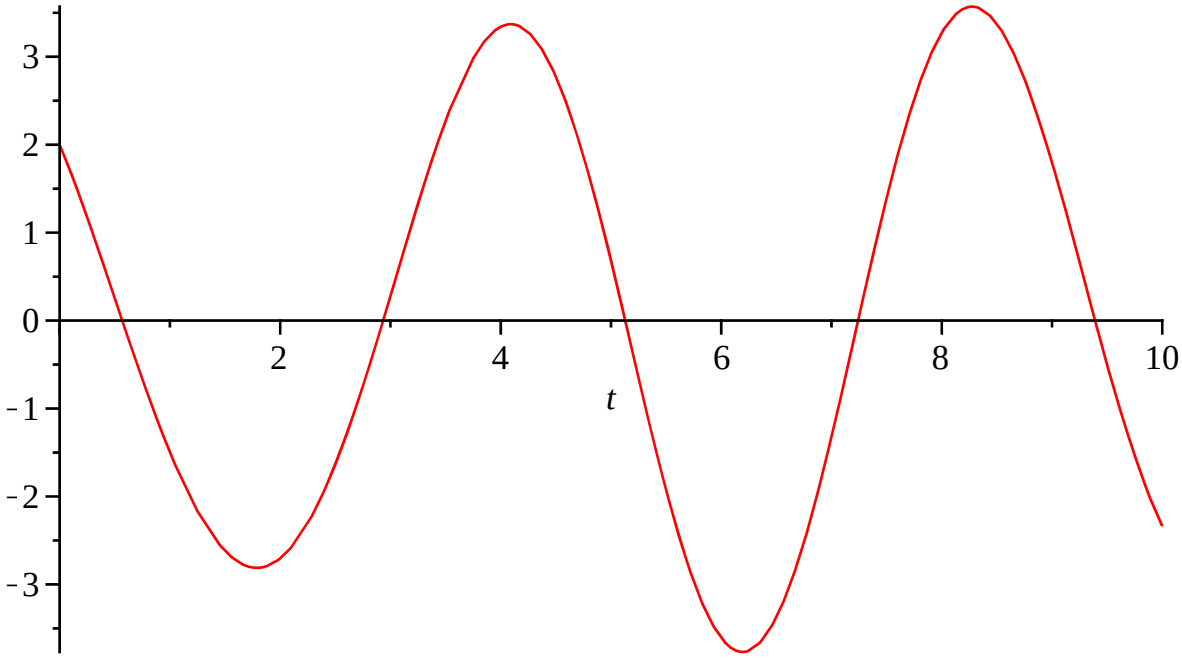
```
> reCondiciones := y(0) = 2, D(y)(0) = -3
```

$$Condiciones := y(0) = 2,\ D(y)(0) = -3 \quad \textbf{(3)}$$

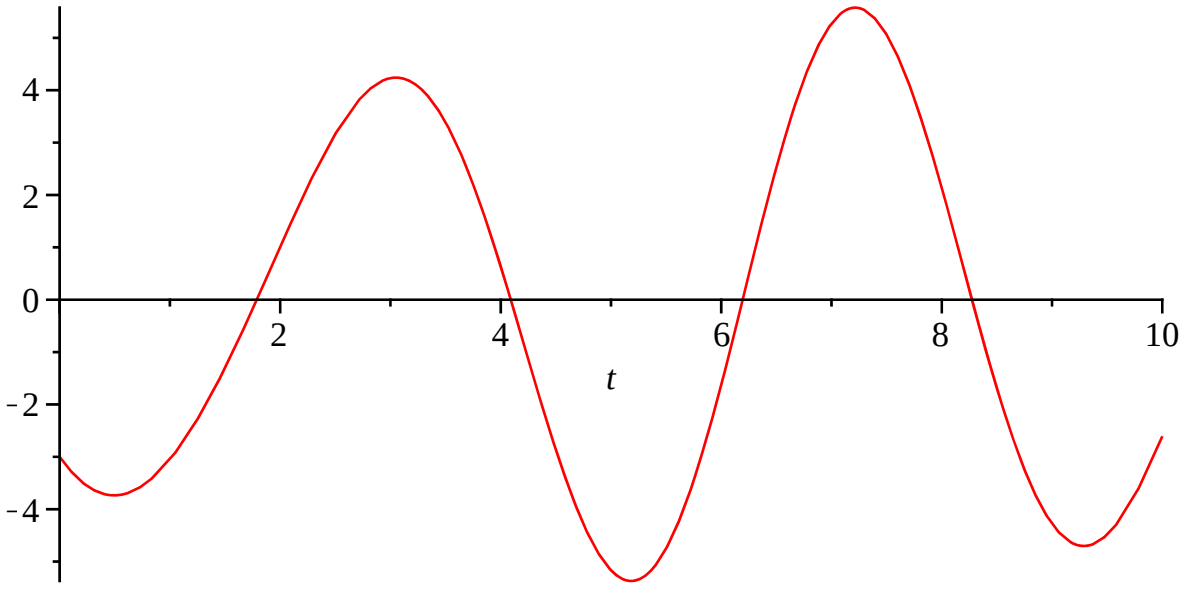
```
> Solucion := dsolve({Ecuacion, Condiciones})
```

$$Solucion := y(t) = -\frac{3}{2}\sin\left(\sqrt{2}\,t\right)\sqrt{2} + \frac{5}{2}\cos\left(\sqrt{2}\,t\right) - \frac{1}{2}\cos(2\,t) \quad \textbf{(4)}$$

```
> plot(rhs(Solucion), t = 0..10)
```




```
> plot(rhs(diff(Solucion, t)), t = 0..10)
```



```
> restart
> Sistema := diff(y1(t), t) = 2·y1(t) + 4·y2(t), diff(y2(t), t) = -y1(t) + 3·y2(t);
```

$$Sistema := \frac{d}{dt} y_1(t) = 2\,y_1(t) + 4\,y_2(t),\ \frac{d}{dt} y_2(t) = -y_1(t) + 3\,y_2(t) \tag{5}$$

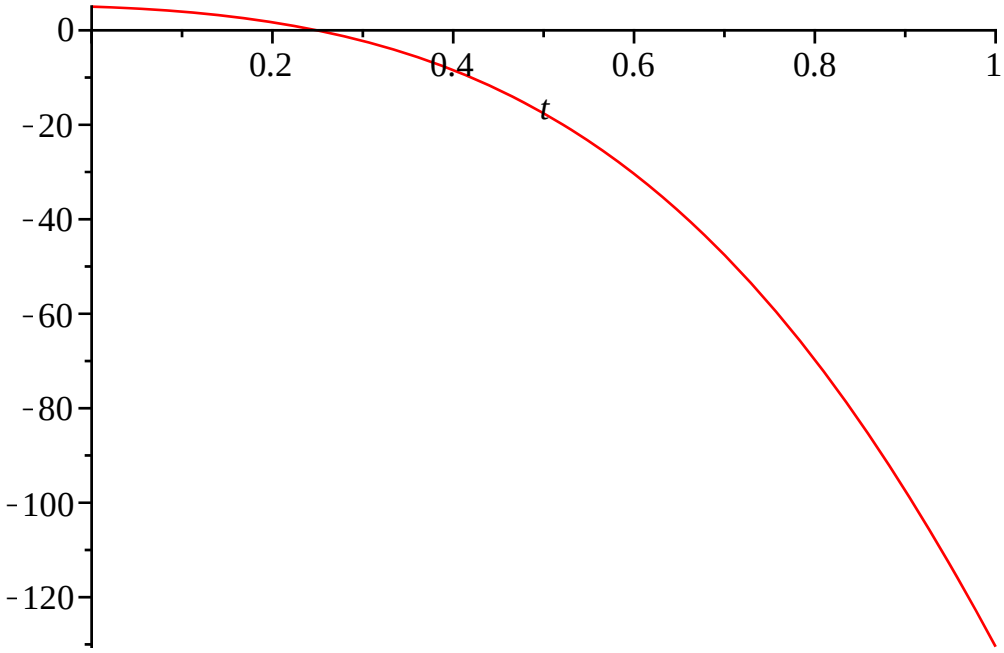
```
> Condiciones := y1(0) = 5, y2(0) = -4
```

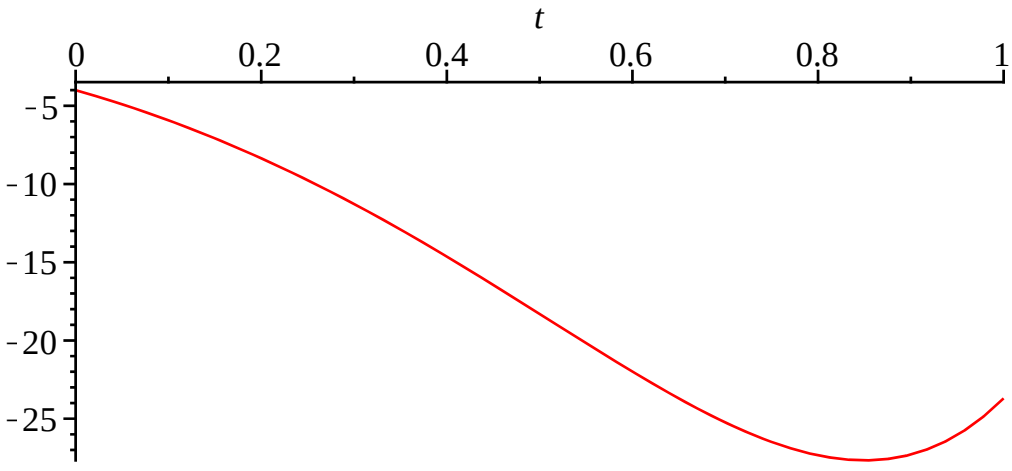
$$Condiciones := y_1(0) = 5,\ y_2(0) = -4 \tag{6}$$

```
> Solucion := dsolve({Sistema, Condiciones})
```

$$Solucion := \left\{ y_1(t) = e^{\frac{5}{2}t}\left(-\frac{37}{15}\sin\left(\frac{1}{2}\sqrt{15}\,t\right)\sqrt{15} + 5\cos\left(\frac{1}{2}\sqrt{15}\,t\right)\right),\ y_2(t) = -\frac{1}{8}e^{\frac{5}{2}t}\left(\frac{112}{15}\sin\left(\frac{1}{2}\sqrt{15}\,t\right)\sqrt{15} + 32\cos\left(\frac{1}{2}\sqrt{15}\,t\right)\right)\right\} \tag{7}$$

```
> plot(rhs(Solucion1), t = 0..1)
```




```
> plot(rhs(Solucion2), t = 0..1)
```