Exercise 15, Sect 3.4

```
> Eqn15:=4*diff(y(t),t$2)+12*diff(y(t),t)+9*y(t)=0;
```

$$Eqn15 := 4\left(\frac{d^2}{dt^2}y(t)\right) + 12\left(\frac{d}{dt}y(t)\right) + 9\,y(t) = 0 \quad (1)$$

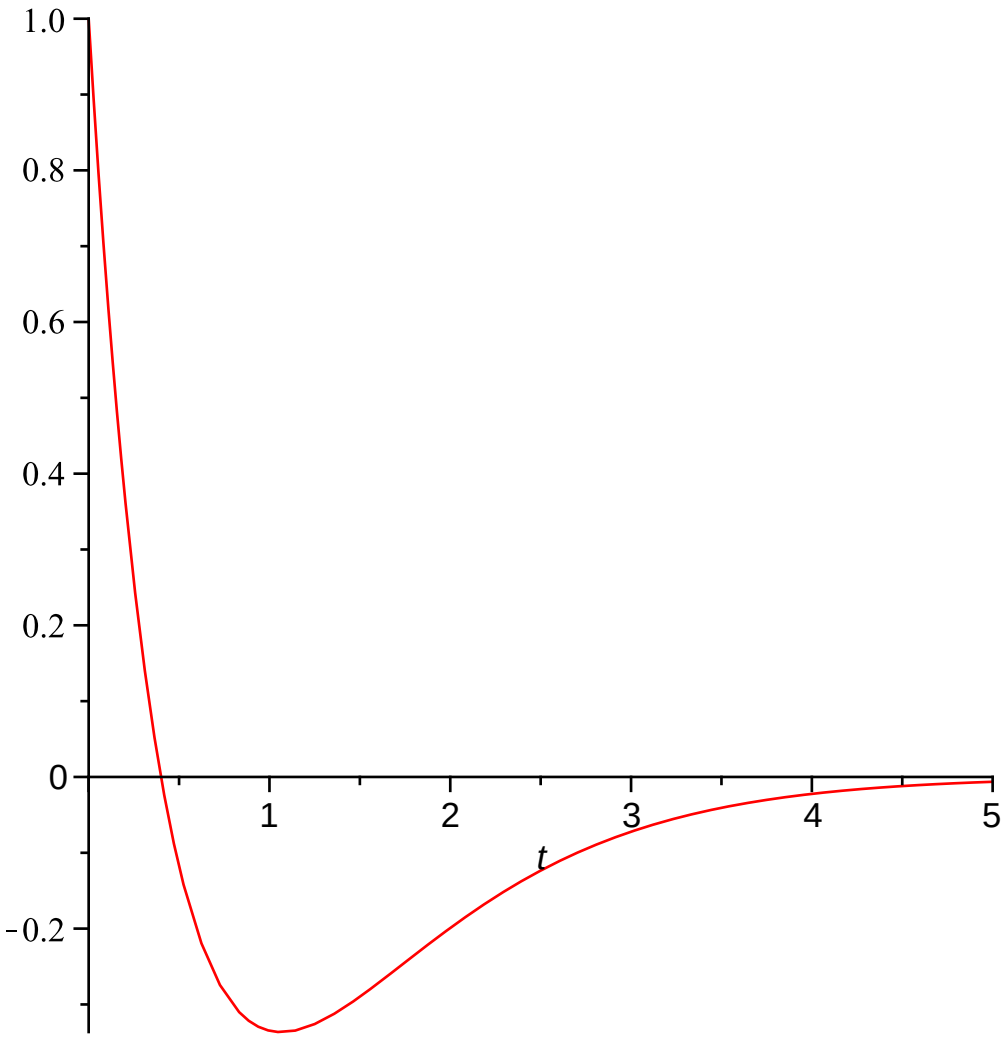
```
> Y1:=dsolve( { Eqn15, y(0)=1, D(y)(0)=-4 },y(t));
```

$$Y1 := y(t) = e^{-\frac{3}{2}t} - \frac{5}{2}e^{-\frac{3}{2}t}t \quad (2)$$

```
> Y2:=rhs(Y1);
```

$$Y2 := e^{-\frac{3}{2}t} - \frac{5}{2}e^{-\frac{3}{2}t}t \quad (3)$$

```
> plot(Y2,t=0..5);
```




```
> solve(Y2=0,t);
```

$$\frac{2}{5} \quad (4)$$

```
> solve(diff(Y2,t)=0,t);
```

$$\frac{16}{15} \tag{5}$$

```
> subs(t=16/15,Y2);
```

$$-\frac{5}{3}\, e^{-\frac{8}{5}} \tag{6}$$

```
> Z1:=dsolve( {Eqn15,y(0)=1,D(y)(0)=B},y(t));
```

$$Z1 := y(t) = e^{-\frac{3}{2}t} + \left(B + \frac{3}{2}\right) e^{-\frac{3}{2}t}\, t \tag{7}$$

```
> Z2:=rhs(Z1);
```

$$Z2 := e^{-\frac{3}{2}t} + \left(B + \frac{3}{2}\right) e^{-\frac{3}{2}t}\, t \tag{8}$$