

> restart :

> Ecuacion := diff(y(t), t\$2) + 2·diff(y(t), t) + 2·y(t) = 3·exp($\frac{t}{8}$)

$$Ecuacion := \frac{d^2}{dt^2} y(t) + 2 \left(\frac{d}{dt} y(t) \right) + 2 y(t) = 3 e^{\frac{1}{8} t} \quad (1)$$

> Condiciones := y(0) = 5, D(y)(0) = -5;

$$Condiciones := y(0) = 5, D(y)(0) = -5 \quad (2)$$

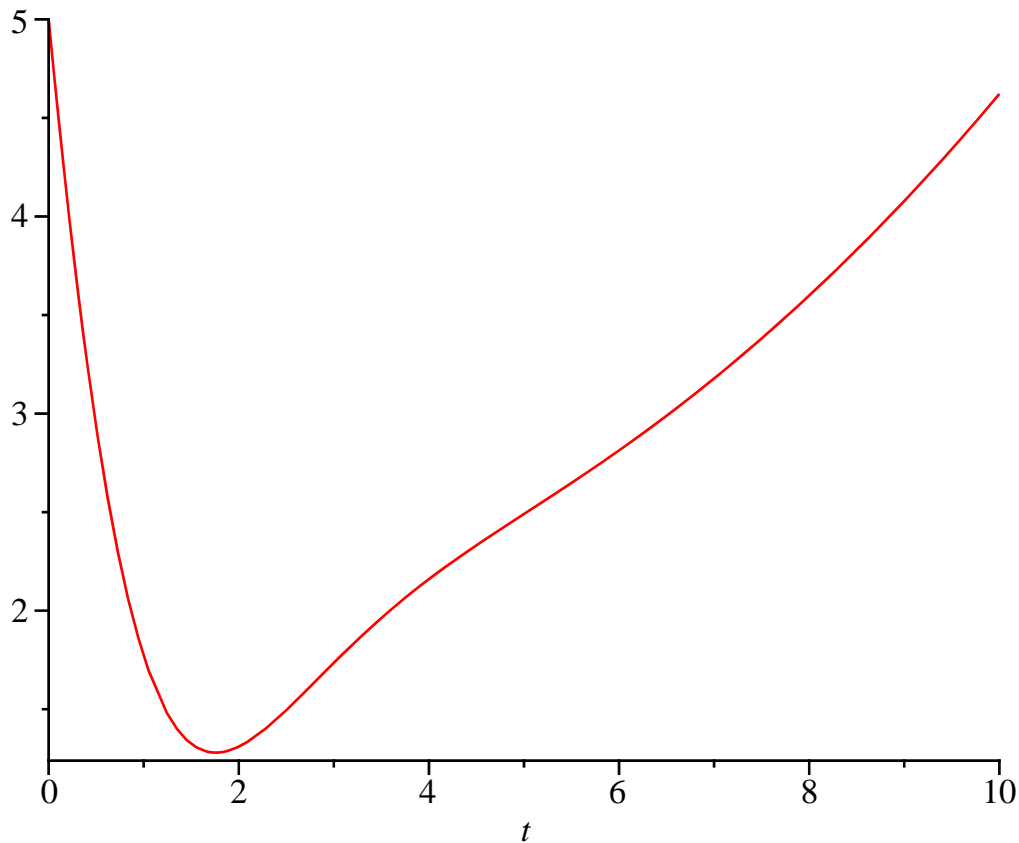
> Solucion := dsolve({Ecuacion, Condiciones});

$$Solucion := y(t) = -\frac{216}{145} e^{-t} \sin(t) + \frac{533}{145} e^{-t} \cos(t) + \frac{192}{145} e^{\frac{1}{8} t} \quad (3)$$

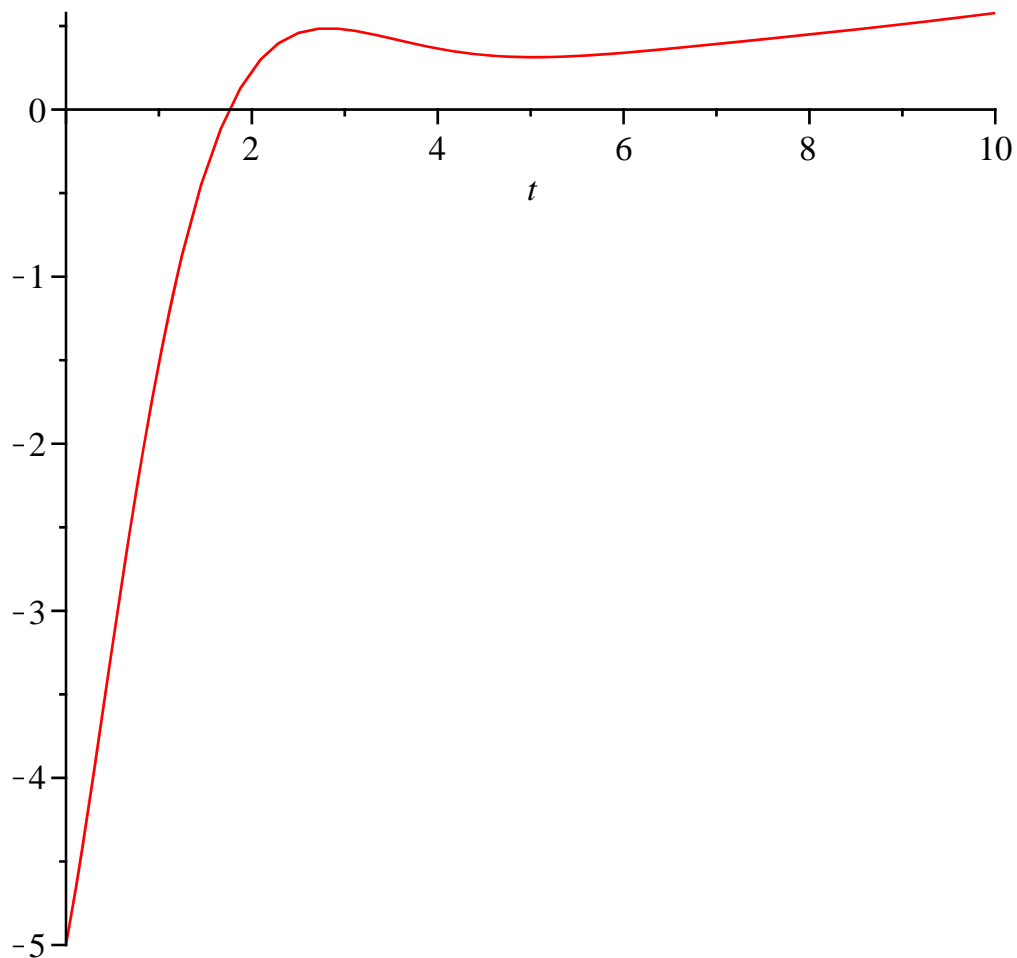
> Derivada := diff(Solucion, t);

$$Derivada := \frac{d}{dt} y(t) = -\frac{317}{145} e^{-t} \sin(t) - \frac{749}{145} e^{-t} \cos(t) + \frac{24}{145} e^{\frac{1}{8} t} \quad (4)$$

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



> plot(rhs(Derivada), t=0..10)



> restart :

> Sistema := diff ($x_1(t)$, t) = $x_1(t) - x_2(t)$, diff ($x_2(t)$, t) = $-2 \cdot x_1(t) + 2 \cdot x_2(t)$;

$$\text{Sistema} := \frac{d}{dt} x_1(t) = x_1(t) - x_2(t), \frac{d}{dt} x_2(t) = -2 x_1(t) + 2 x_2(t) \quad (5)$$

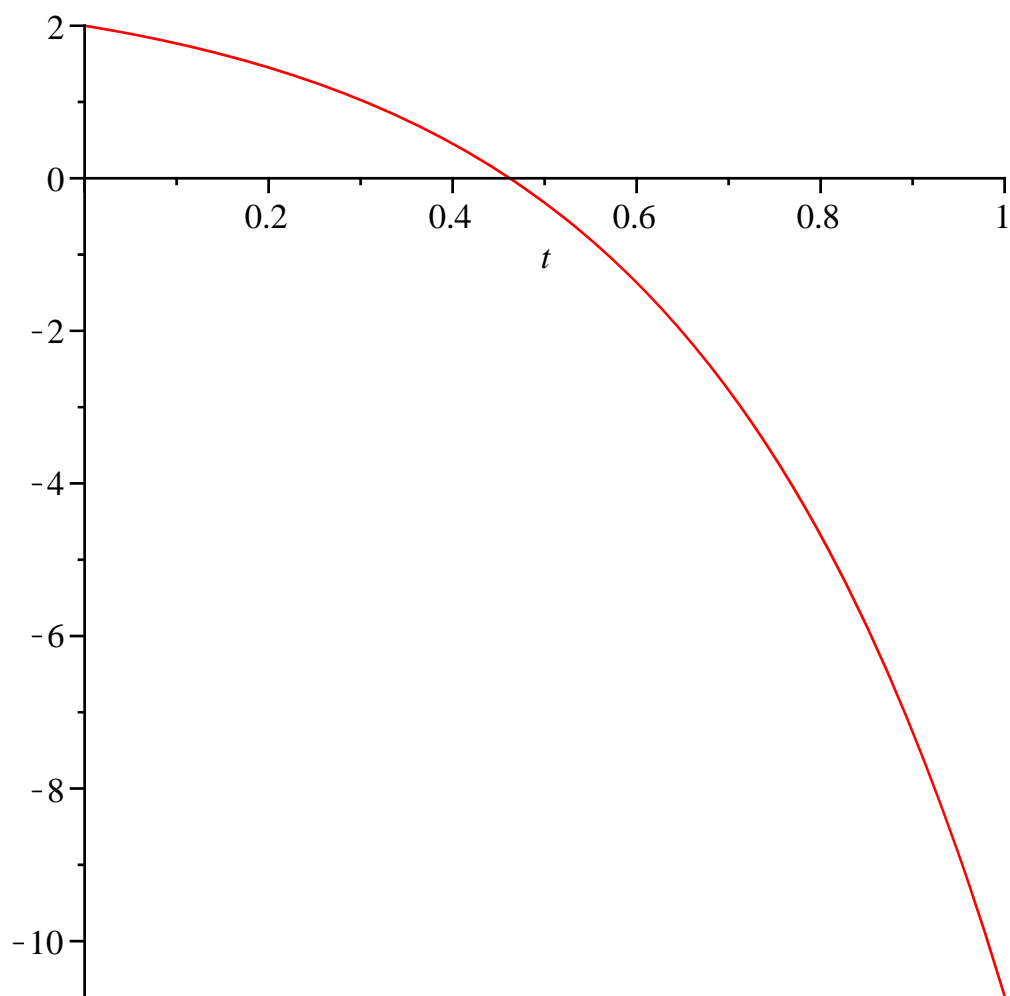
> Condiciones := $x_1(0) = 2$, $x_2(0) = 4$;

$$\text{Condiciones} := x_1(0) = 2, x_2(0) = 4 \quad (6)$$

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

$$\text{Solucion} := \left\{ x_1(t) = \frac{8}{3} - \frac{2}{3} e^{3t}, x_2(t) = \frac{4}{3} e^{3t} + \frac{8}{3} \right\} \quad (7)$$

> plot(rhs(Solucion₁), t=0..1)



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

