```
using SymPy
```

```
using Plots
```

Definindo as variáveis

(t, s, A, B)

```
@syms t s A B
```

R1 = 1

```
R1 = 1
```

R2 = 2

```
R2 = 2
```

L = 1

```
L = 1
```

C = 0.25

```
C = 1/4
```

V0 = 6

```
V0 = 6
```

Para t=0-

iL0 = -2

```
iL0 = -2
```

v0 = 2

```
v0 = 2
```

Para t>0

α = 2.0

```
α = 1/(2*R1*C)
```

ω0 = 2.0

```
ω0 = 1/sqrt(L*C)
```

s1 = -2.0 + 0.0im

```
s1 = -α + sqrt(Complex(α^2 - ω0^2))
```

s2 = -2.0 - 0.0im

```
1 s2 = -α - sqrt(Complex(α^2 - ω0^2))
```

Calculando a Corrente

i_t =

$$(A + Bt)e^{-2.0t}$$

```
1 i_t = (A + B*t)*exp(s1*t)
```

di_dt =

$$Be^{-2.0t} - 2.0\,(A + Bt)e^{-2.0t}$$

```
1 di_dt = diff(i_t, t)
```

v_t =

$$Be^{-2.0t} - 2.0\,(A + Bt)e^{-2.0t}$$

```
1 v_t = L*di_dt
```

eq1 =

$$A = -2$$

```
1 eq1 = subs(i_t, t=>0) ~ iL0
```

eq2 =

$$-2.0A + B = 2$$

```
1 eq2 = subs(v_t, t=>0) ~ v0
```

sol = Dict($B \Rightarrow -2.0$, $A \Rightarrow -2.0$)

```
1 sol = solve([eq1, eq2], [A, B])
```

i_t_sol =

$$(-2.0t - 2.0)e^{-2.0t}$$

```
1 i_t_sol = subs(i_t, sol)
```

v_t_sol =

$$-2.0\,(-2.0t - 2.0)e^{-2.0t} - 2.0e^{-2.0t}$$

```
1 v_t_sol = subs(v_t, sol)
```

i_t_simplified =

$$2.0\,(-t-1)e^{-2.0t}$$

```
1 i_t_simplified = simplify(i_t_sol)
```

v_t_simplified =

$$(4.0t+2.0)e^{-2.0t}$$

```
1 v_t_simplified = simplify(v_t_sol)
```

Gráfico

```
1 md"### Gráfico"
```

i (generic function with 1 method)

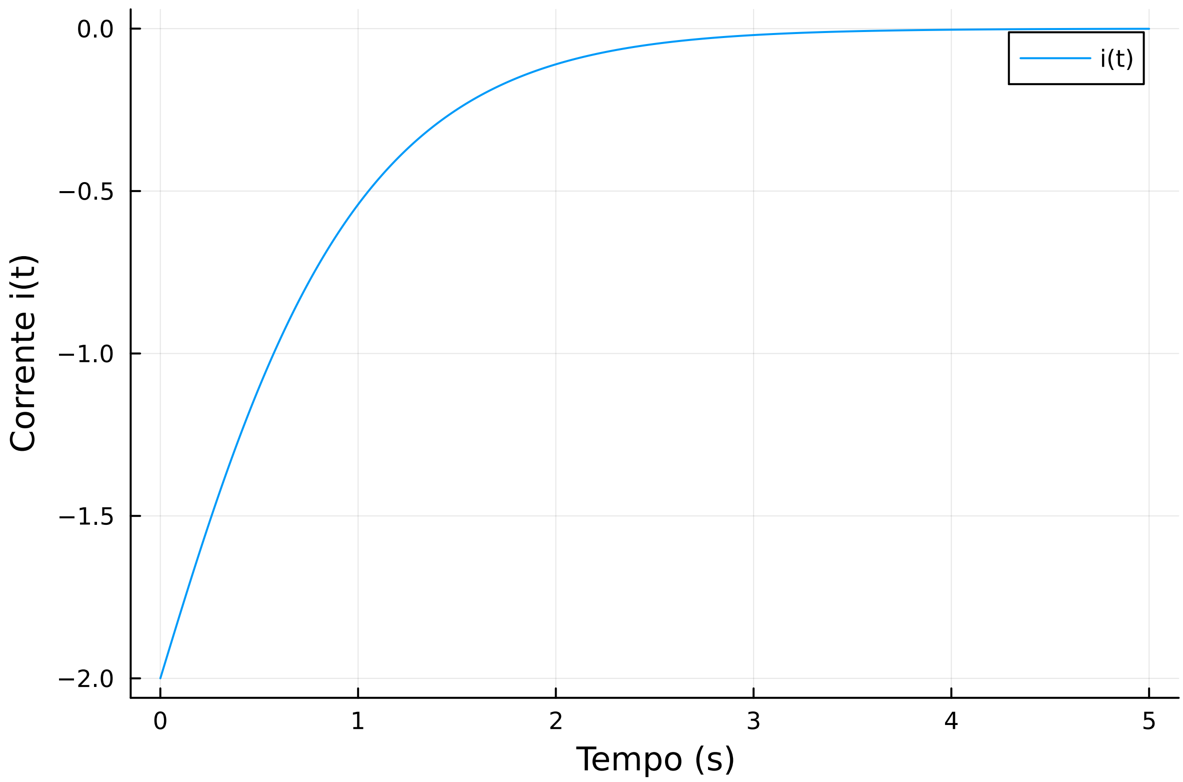
```
1 i(t) = (-2 - 2*t)*exp(-2*t)
```

v (generic function with 1 method)

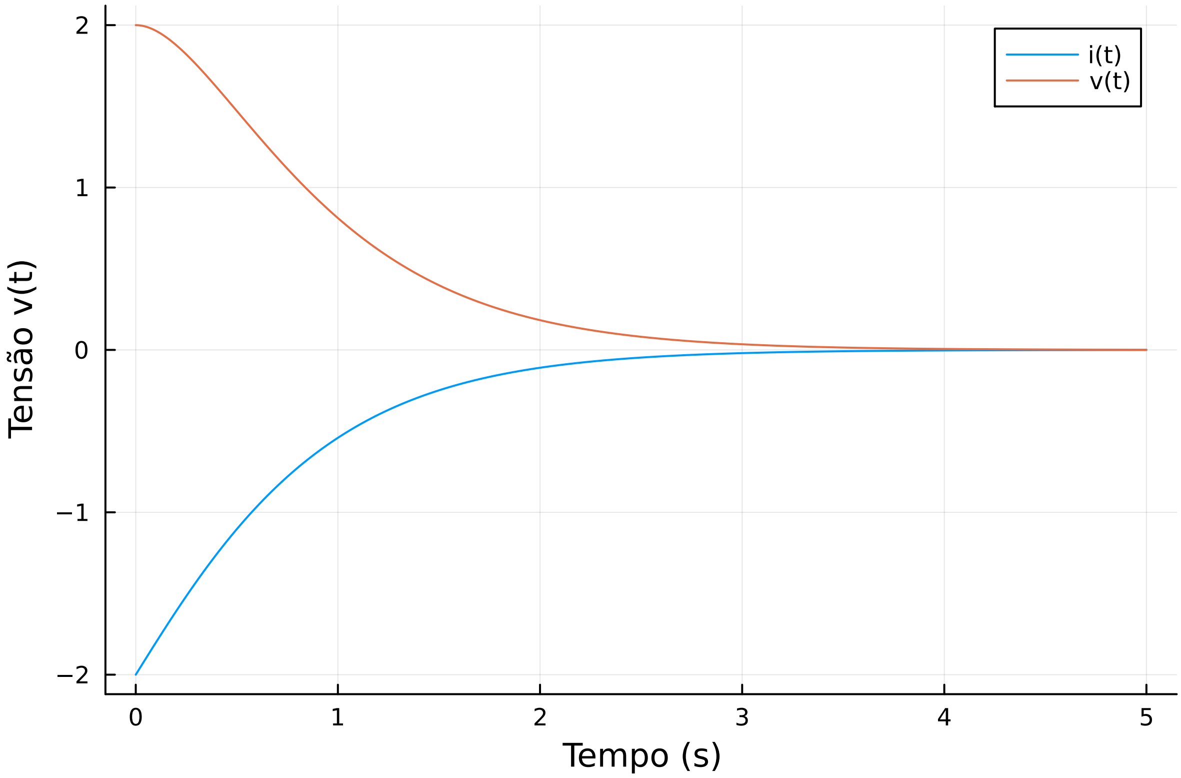
```
1 v(t) = (2 + 4*t)*exp(-2*t)
```

t_values = 0.0:0.01:5.0

```
1 t_values = 0:0.01:5
```




```
1 plot(t_values, i.(t_values), xlabel="Tempo (s)", ylabel="Corrente i(t)",
  label="i(t)", legend=:topright)
```




```
plot!(t_values, v.(t_values), xlabel="Tempo (s)", ylabel="Tensão v(t)",
label="v(t)", legend=:topright)
```