```
using SymPy
```

```
using Plots
```

Definindo os parâmetros do circuito

(t, R, C)

```
@syms t R C
```

```
v (generic function with 1 method)
```

```
v(t) = 10 * exp(-4 * t)
```

```
i (generic function with 1 method)
```

```
i(t) = 0.2 * exp(-4 * t)
```

a) Calculando R e C

```
C_val = 0.005
```

```
C_val = 5e-3
```

```
R_val = 50.0
```

```
R_val = 1 / (4 * C_val)
```

b) Calculando a constante de tempo

```
τ = 0.25
```

```
τ = R_val * C_val
```

c) Calculando energia inicial do capacitor

```
W_0 = 0.25
```

```
W_0 = (1/2) * C_val * (10^2)
```

d) Calculando tempo necessário para dissipar 50% do capacitor

```
t_50 = 0.08664339756999316
```

```
t_50 = (1/8) * log(2)
```

Graficos

```
t_values = 0.0:0.01:1.0
```

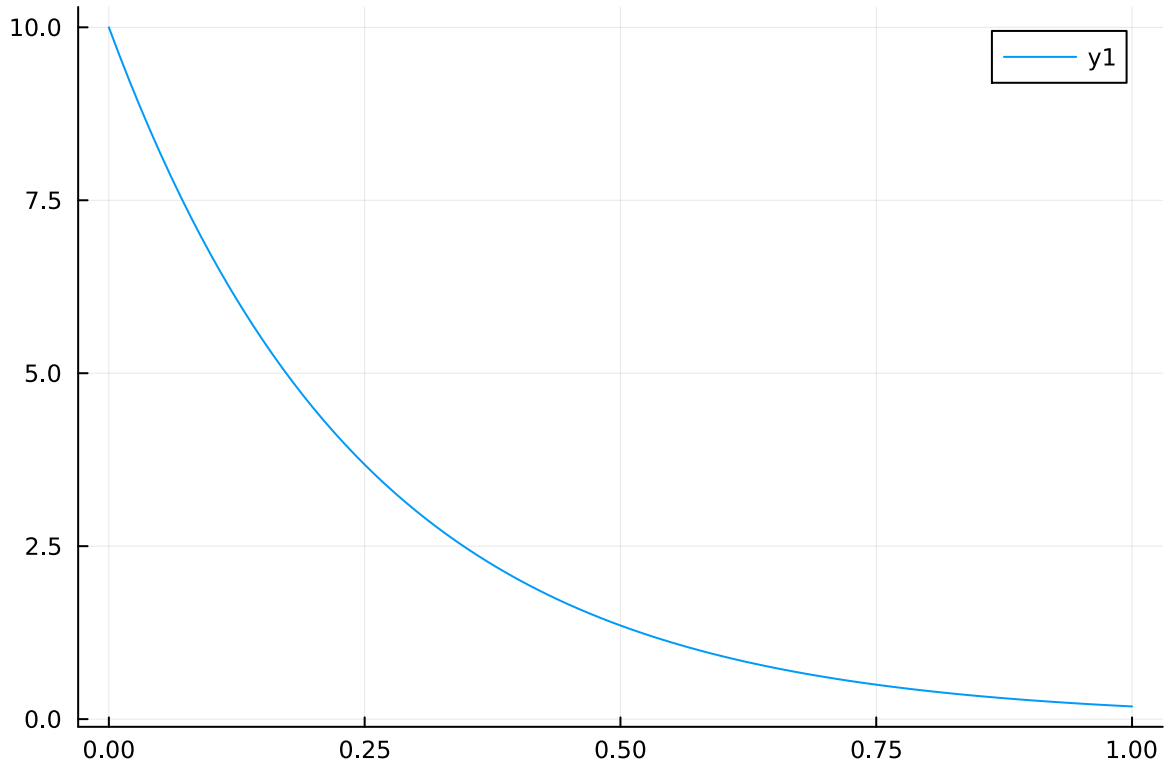
```
1 t_values = 0:0.01:1
```

```
v_values =
 [10.0, 9.60789, 9.23116, 8.8692, 8.52144, 8.18731, 7.86628, 7.55784, 7.26149, 6.97676, 6.7
```

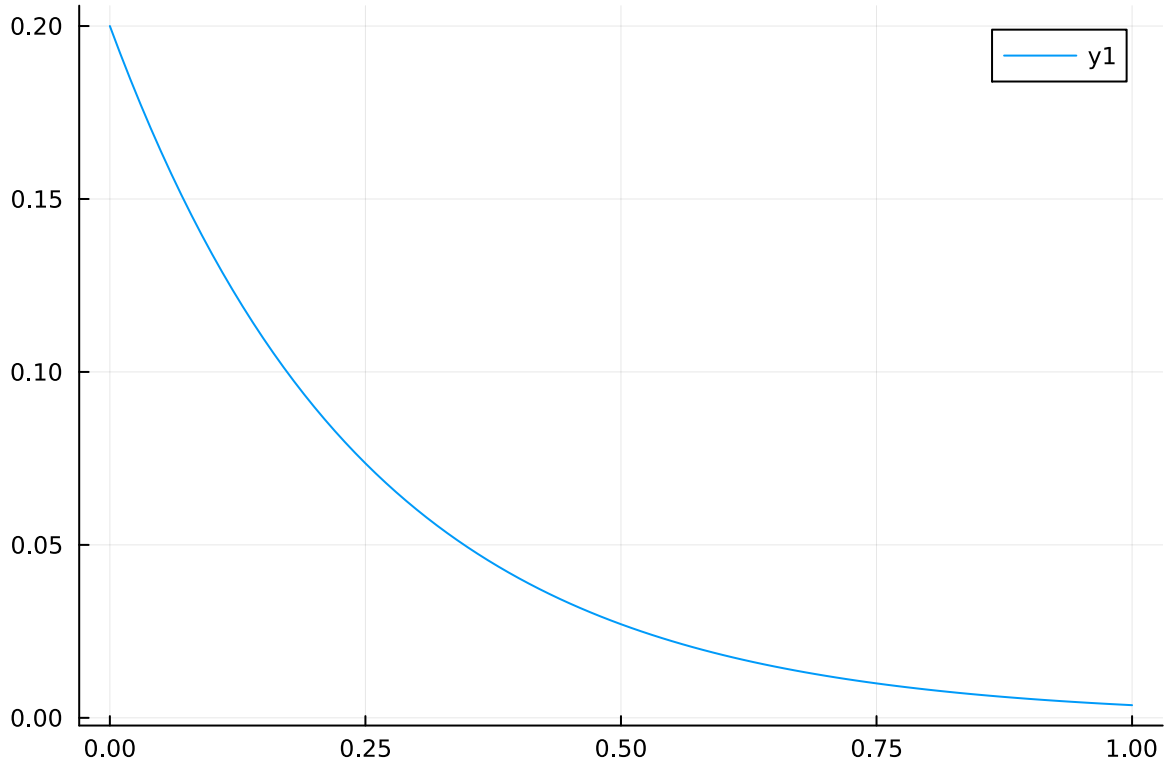
```
1 v_values = [v(t_val) for t_val in t_values]
```

```
i_values =
 [0.2, 0.192158, 0.184623, 0.177384, 0.170429, 0.163746, 0.157326, 0.151157, 0.14523, 0.139
```

```
1 i_values = [i(t_val) for t_val in t_values]
```




```
plot(t_values, v_values) #tensao
```




```
plot(t_values, i_values) #corrente
```