```
using SymPy
```

```
using Plots
```

Definindo as Variáveis

(s, t)

```
@syms s t
```

V_s =

$$\frac{9}{s\left(s^{2}+0.25\right)}$$

```
V_s = 9 / (s * (s^2 + 0.25))  # V(s) = 9 / [s(s^2 + 0.25)]
```

A = 0.0 + 36.0im

```
A = 36 / (-im)  # 36 ∠ 90°
```

B = 0.0 - 36.0im

```
B = 36 / (im)   # 36 ∠ -90°
```

V_s_expanded =

$$\frac{36.0i}{s+0.5+0.5i}-\frac{36.0i}{s+0.5-0.5i}$$

```
V_s_expanded = A / (s + (0.5 + im * 0.5)) + B / (s + (0.5 - im * 0.5))
```

v_t =

$$-36.0ie^{t(-0.5-0.5i)}+36.0ie^{t(-0.5+0.5i)}$$

```
v_t = A * exp((-0.5 + im * 0.5) * t) + B * exp((-0.5 - im * 0.5) * t) #inversa de laplace
```

v_t_simplified =

$$i\left(36.0e^{1.0it}-36.0\right)e^{-0.5t(1+i)}$$

```
v_t_simplified = simplify(v_t)
```

v_t_real =

$$36\cos\left(0.5t-1.5707963267949\right)$$

```
v_t_real = simplify(2 * 18 * cos(0.5 * t - π/2))  # 18cos(0.5t - 90°)
```

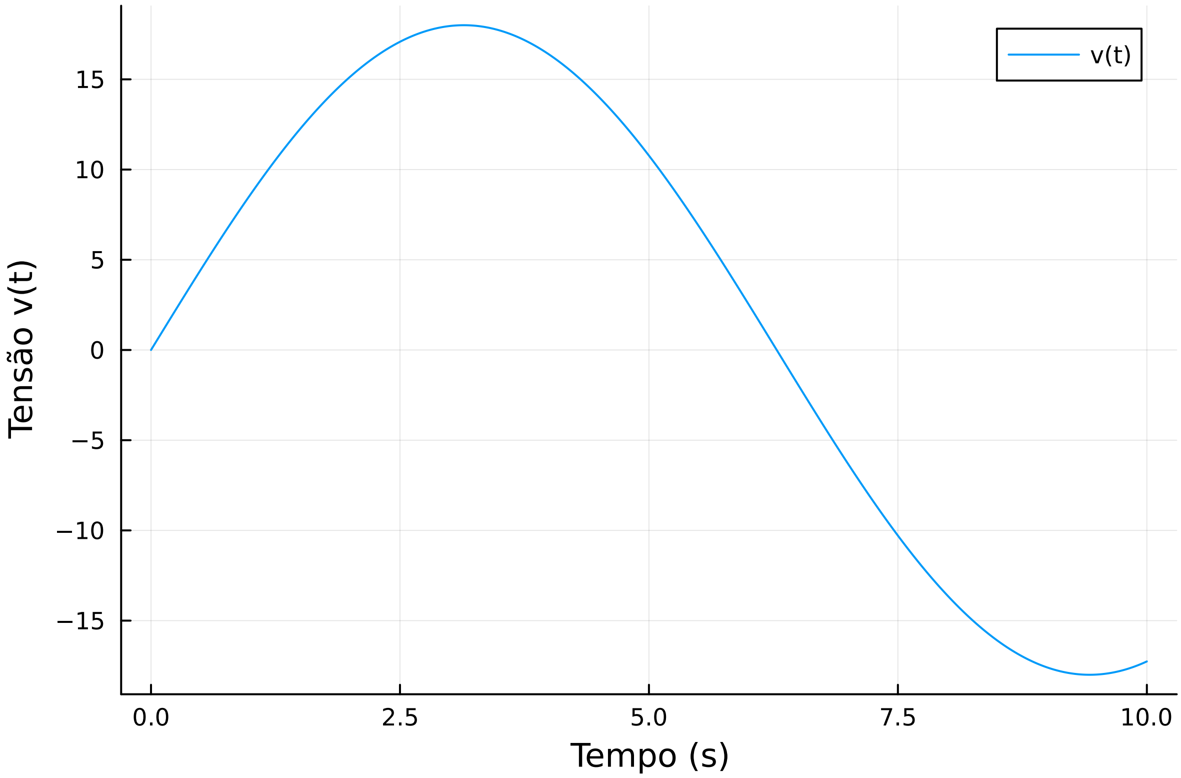
Gráfico

```
t_values = 0.0:0.01:10.0
```

```
t_values = 0:0.01:10
```

```
v_t_numeric =
  [1.10218e-15, 0.0899996, 0.179997, 0.26999, 0.359976, 0.449953, 0.539919, 0.629871, 0.719
```

```
v_t_numeric = 18 * cos.(0.5 * t_values .- π/2)  # Simplificação para obter o valor real
```




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