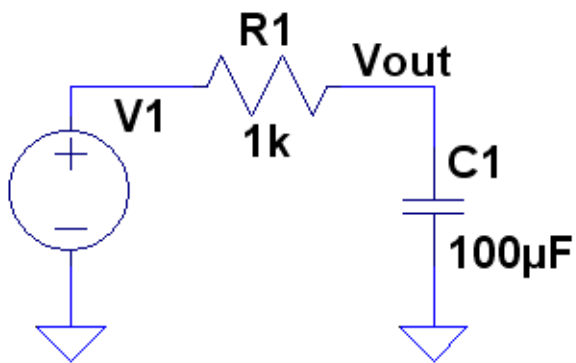
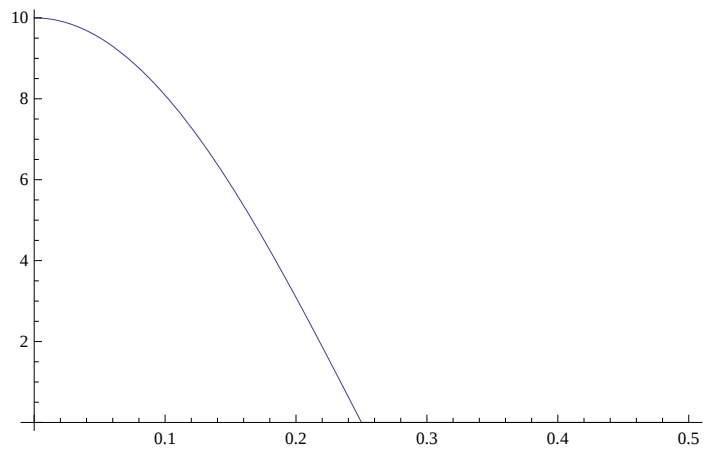


```
Plot[(10 Sin[2 π * t + 90 °]) * Boole[t < 0.25], {t, 0, 0.5}]
```



$$V_o(s) = V_i(s) * \frac{\frac{1}{s \cdot C1}}{(R1 + \frac{1}{s \cdot C1})}$$

$$s V_o = \frac{V_i}{C1 (R1 + \frac{1}{C1 s})}$$

```
In[45]:= LaplaceTransform[(10 Sin[2 π * t + 90 °]), t, s]
```

$$\text{Out[45]} = \frac{10 s}{4 \pi^2 + s^2}$$

```
In[37]:= R1 = 1000; C1 = 100 × 10-6;
```

$$\text{Out[38]} = \frac{\frac{1}{s \cdot C1}}{(R1 + \frac{1}{s \cdot C1})} = \frac{10000}{(1000 + \frac{10000}{s}) s}$$

$$V_i = \frac{10 s}{4 \pi^2 + s^2};$$

In[47]:= **InverseLaplaceTransform** $\left[\text{Vi} * \frac{10\,000}{\left(1000 + \frac{10\,000}{s}\right) s}, s, t\right]$

Out[47]=
$$\frac{50 e^{-10 t} \left(-5 + 5 e^{10 t} \cos[2 \pi t] + e^{10 t} \pi \sin[2 \pi t]\right)}{25 + \pi^2}$$

$$\text{Vout}(t) = \frac{50 e^{-10 t} \left(-5 + 5 e^{10 t} \cos[2 \pi t] + e^{10 t} \pi \sin[2 \pi t]\right)}{25 + \pi^2}$$

In[48]:=

A = InverseLaplaceTransform $\left[\text{Vi} * \frac{10\,000}{\left(1000 + \frac{10\,000}{s}\right) s}, s, t\right];$

In[49]:= **Plot** $\left[\{A, (10 \sin[2 \pi * t + 90^\circ])\}, \{t, 0, 0.25\}\right]$

