
1. P4.27
2. P4.62 *(NOTE: There is a typo in part (b) of problem P4.61, which should say \( v'(0+) = 10^{9} \text{V} \).)*
3. P4.66
4. P5.16
5. Suppose that \( v_1(t) = 80 \cos(\omega t) \) and \( v_2(t) = 60 \sin(\omega t) \). Use phasors to reduce the sum \( v_s(t) = v_1(t) + v_2(t) \) to a single term of the form \( V_m \cos(\omega t + \theta) \). Draw a phasor diagram, showing \( V_1 \), \( V_2 \), and \( V_s \). State the phase relationships between each pair of these phasors.
6. Find an expression for \( v(t) \) of the form \( V_m \cos(\omega t + \theta) \) when \( v(t) = v_1(t) + v_2(t) + v_3(t) + v_4(t) \) with
   \[
   \begin{align*}
   v_1(t) &= 20 \sin(\omega t) \\
   v_2(t) &= 20 \cos(\omega t + \frac{\pi}{6}) \\
   v_3(t) &= 20 \sin(\omega t + \frac{\pi}{3}) \\
   v_4(t) &= -10 \cos(\omega t)
   \end{align*}
   
   Use phasors.
7. P5.33
8. Find the complex impedance in polar form of the network shown in Figure 1 for \( \omega = 1000 \frac{1}{\text{s}} \), \( \omega = 2000 \frac{1}{\text{s}} \), and \( \omega = 4000 \frac{1}{\text{s}} \).

\[
\begin{align*}
200\mu\text{H} \\
100\Omega \\
20\mu\text{F}
\end{align*}
\]

Figure 1: Circuit 1