Problem 1 (30 points)
Sketch \( v_{01}(t) \), \( v_{02}(t) \), and \( v_0(t) \). Consider that all initial voltages are zero.
Problem 2 (25 points)

Find $I_0$.

$I_0 = I_{01} + I_{02} + I_{03}

I_{01} = 0

I_{02} = 0

I_{03} = \frac{1}{3} A$

Let three $3 \Omega$ resistors in parallel divide equally the $1 A$ current produced by the source.

$I_0 = 1 - \frac{1}{3} = \frac{2}{3} A$
Problem 3 (15 points)

The figure shows the voltage waveform for a 1000 μH inductor. Sketch its current waveform considering that at $t = 0$ the current was 50 A.

\[
i = \frac{A}{L} \left( \int_{0}^{t} V \, dt + 50 \right)
\]

For $t = 0.3 \times 10^{-3}$, $i = 50$

At $t = 0.1 \text{ ms}$

\[
i(0.1 \times 10^{-3}) = 51 \text{ A}
\]
Problem 4 (30 points)

Find the Thevenin and Norton equivalents for the circuit in the next figure under dc conditions.

In dc the circuit reduces to:

\[
\begin{align*}
\frac{4\Omega}{6\Omega} &= \frac{4\Omega}{2\Omega} = \frac{4\Omega}{2\Omega} \\
\frac{30\Omega}{6\Omega} &= \frac{30\Omega}{2\Omega} = \frac{30\Omega}{2\Omega} \\
\frac{2\Omega}{2\Omega} &= \frac{2\Omega}{2\Omega} = \frac{2\Omega}{2\Omega} \\
\frac{1\Delta}{2\Omega} &= \frac{1\Delta}{2\Omega} = \frac{1\Delta}{2\Omega} \\
\frac{1\Delta}{6\Omega} &= \frac{1\Delta}{6\Omega} = \frac{1\Delta}{6\Omega} \\
\end{align*}
\]