Problem 3.60  Find the Norton equivalent circuit at terminals \((a,b)\) for the circuit in Fig. P3.60.

![Circuit for Problem 3.60.](image)

**Solution:** The circuit contains no independent sources. Hence, 

\[ V_{Th} = 0. \]

To determine \(R_{Th}\), we add an external voltage source \(V_{ex}\) and proceed to find \(I_{ex}\).

\[ 0.1I_1 + 0.2(I_1 - I_2) - 0.2I_0 = 0 \]
\[ 0.2I_0 + 0.2(I_2 - I_1) + 0.2I_2 + 0.25(I_2 - I_3) = 0 \]
\[ 0.25(I_3 - I_2) + V_{ex} = 0 \]

Additionally, \(I_0 = I_1\).

Solution is:

\[ I_1 = -5V_{ex}, \quad I_2 = -2.5V_{ex}, \quad I_3 = -6.5V_{ex}, \]
\[ I_{ex} = -I_3 = 6.5V_{ex} \]
\[ R_{Th} = \frac{V_{ex}}{I_{ex}} = \frac{1}{6.5} = 0.15 \, \Omega \]

Hence,