Prelab – Experiment 2
DC Circuit Theorems

Question 1

Solve Problem 2.5 in Sprott, but find I_3 for $R_3 = 50\Omega$ and 100Ω. Show your work and give a brief description that explains how you are using the superposition theorem.

Question 2

Solve Problem 2.7 in Sprott but find I_3 for $R_3 = 50\Omega, 100\Omega$ and 150Ω. Show your work and draw a circuit diagram representing the Thevenin equivalent circuit connected to R_3.

Question 3

Problems 2.5 and 2.7 refer to the circuit in Problem 2.1, where one is asked to write a set of five independent current and voltage equations using Kirchhoff's Laws. This is a correct general approach, but writing and solving five equations is a lot of work (especially if you have to do it multiple times for different values of R_3). Which method do you think is the easiest: to use Kirchhoff's Laws (2.1), the superposition theorem (2.5) or Thevenin's theorem (2.7)?