

Miniprojekt 1

Erik Englund, Martin Johansson, Oskar Persson

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Kapitel 1

Inledning

1.1 Del 1

1.1.1 Härledning av ekvationssystem

$$P_1 = 10$$

$$P_5 = 0$$

$$P_6 = 0$$

$$Q_j = k \cdot L(P_{in} - P_{ut})$$

$$Q_1 = Q_2 + Q_3 \quad (1)$$

$$Q_3 = Q_4 + Q_6 \quad (2)$$

$$Q_5 = Q_2 + Q_4 \quad (3)$$

$$\begin{aligned} (1): \quad & 0.001 \cdot 300(P_1 - P_2) = (0.001 \cdot 500(P_2 - P_4)) + (0.001 \cdot 500(P_2 - P_3)) \\ & \Rightarrow 0.3P_1 - 0.3P_2 = 0.5P_2 - 0.5P_4 + 0.5P_2 - 0.5P_3 \end{aligned}$$

$$\begin{aligned} (2): \quad & 0.001 \cdot 500(P_2 - P_3) = (0.001 \cdot 600(P_3 - P_4)) + (0.001 \cdot 500(P_3 - P_6)) \\ & \Rightarrow 0.5P_2 - 0.5P_3 = 0.6P_3 - 0.6P_4 + 0.5P_3 - 0.5P_6 \\ & \Rightarrow 0.5P_2 - 0.5P_3 = 1.1P_3 - 0.6P_4 - 0.5P_6 \\ & \Rightarrow 0.5P_2 - 1.6P_3 + 0.6P_4 + 0.5P_6 = 0 \end{aligned}$$

$$\begin{aligned} (3): \quad & 0.001 \cdot 500(P_2 - P_4) + 0.001 \cdot 600(P_3 - P_4) = (0.001 \cdot 500(P_4 - P_5)) \\ & \Rightarrow 0.5P_2 - 0.5P_4 + 0.6P_3 - 0.6P_4 = 0.5P_4 - 0.5P_5 \\ & \Rightarrow 0.5P_2 + 0.6P_3 - 1.1P_4 = 0.5P_4 - 0.5P_5 \\ & \Rightarrow 0.5P_2 + 0.6P_3 - 1.6P_4 + 0.5P_5 = 0 \end{aligned}$$

1.1.2 körningslogg

1.1.3 graf från “backslash”-operatorn