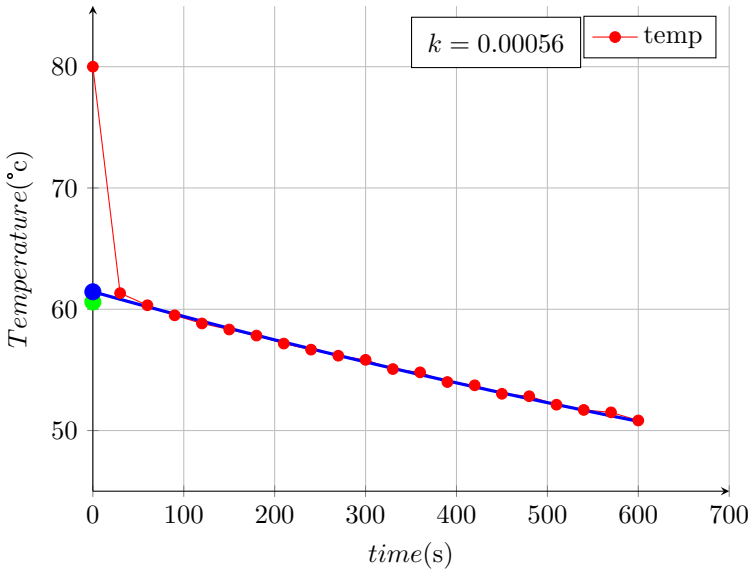
Adding cold water after 0min

$$\boxed{T(t) = S + (T_0 - S)\,\mathrm{e}^{-kt}}$$

$$\boxed{T_{\mathrm{eq}} = \frac{(V_1 T_1 + V_2 T_2)}{(V_1 + V_2)}}$$

- Room temperature $S = 24\,^{\circ}\mathrm{C}$
- initial hot water temperature $T\mathrm{h} = 80^{\circ}\mathrm{C}$
- initial cold water temperature $T\mathrm{c} = 24^{\circ}\mathrm{C}$
- hot water volume = 150ml
- cold water volume = 50ml
- Equilibrium Temperature $T_{\mathrm{eq}} = 66.0$
- Theoretical temperature $T_0 = 61.44$



$$T(t) = 24 + [Z - 24]\,\mathrm{e}^{-0.00056t}, \quad R^2 = 0.997$$