$T_{rom} = 21°C$

$T_1 = 99.9$ $T_2 = 87.2$

$T_3 = 86.2$ $T_4 = 82.2$

$T_5 = 79.9$ $T_6 = 76.9$

$T_7 = 24.5$ $T_8 = 72.2$

$T_9 = 20.0$ $T_{10} = 68.4$ $T_{11} = 66.6$

Eg målte i 10min totallt og tok ein måling kvart min.

Eg kokte vatn i ein kjele.

# Newtons-metode / teoretisk

$$\dot{T} = \alpha (t - T_k)$$

$$\dot{T} - \alpha T = \alpha T_k \quad | \cdot e^{-\alpha t}$$

$$\dot{T} e^{-\alpha t} - \alpha T e^{-\alpha t} = e^{-\alpha t} \alpha T_k$$

$$T e^{-\alpha t} \qquad u = T \qquad u' = \dot{T}$$

$$v = e^{-\alpha t} \qquad v' = -\alpha e^{-\alpha t}$$

$$u'v + uv'$$

$$\dot{T}e^{-\alpha t} - T\alpha e^{-\alpha t}$$

$$\left(T e^{-\alpha t}\right)' = e^{-\alpha t} T_K \int$$

$$T e^{-\alpha t} = e^{-\alpha t} T_K + C$$

$$T(t) = T_K + e^{\alpha t} C$$

$$T(0) = 99.9 \qquad T_K = 21$$

$$\rightarrow \quad 99.9 = 21 + e^{\alpha 0} C$$

$$\rightarrow \quad 99.9 = 21 + C$$

$$C = 78.9$$

$$T(t) = 21 + e^{\alpha t} \cdot 78.9$$

Vi mätte i 10 min, eller 600s

$$T(600) = 21 + e^{\alpha \cdot 600} \cdot 78.9$$

$$66.6 = 21 + e^{\alpha 600} \cdot 78.9$$

$$45.6 = e^{\alpha 600} \cdot 78.9 \quad | : 78.9$$

$$0.577 = e^{\alpha 600} \quad | \ln$$

$$-0,548 = 600\alpha$$

$$\alpha = 9.13 \cdot 10^{-4}$$

Dette er då $\alpha$-verdien eg brukte for min teoretiske-graf.