

Task I :

Using interpolation :

$$f(t_x) = f(t_1) + (t_x - t_1) \frac{f(t_2) - f(t_1)}{t_2 - t_1}$$

Using this formula for $t = t_x$ $t_1 = 15$ and $t_2 = 20$

$$f(t_x) = f(15) + (t_x - 15) \frac{176 - 250}{20 - 15}$$

Knowing that we sprayed until 200 bacteria are left :

$$f(15) + (t_x - 15) \frac{176 - 250}{20 - 15} = 200$$

We solve for t_x :

$$250 + (t_x - 15) \frac{176 - 250}{20 - 15} = 200$$

$$t_x = 18,3$$

Let check how many bacteria would remaining for this t_x

$$\begin{aligned} f_{A.B}(18,3) &= f(16) + (18,3 - 16) \frac{160 - 240}{24 - 16} \\ &= 240 + 2,3 \frac{-40}{8} \\ &= 240 - 11,5 \\ &= 228,5 \end{aligned}$$

Task II :

To compare the two products we calculate the mean for both products

$$\begin{aligned} \text{A. Breeze} : \frac{96 - 480}{40 - 8} = -12 & \quad / \quad \text{N.M. Bacteria} \frac{70 - 696}{55 - 5} = -12,5 \\ -12,5 < -12 & \quad \text{Thus N.M.B. is the better product overall} \end{aligned}$$