1. (ii) IC : $u(x,0) = f(x) = \frac{Mx}{L}$

By 1.i we know $u(x,t) = u_{ss}(x) + u_h(x,t)$, where

$$u(x,t) = M - \frac{Mx}{L} + u_h(x,t)$$

and $$u_h(x,t) = \sum_{n=1}^{\infty} a_n \sin\left(\frac{n\pi x}{L}\right) e^{-\left(\frac{n\pi}{L}\right)^2 D t}$$

Using maple :