> $kn := \dfrac{int\left(M \cdot \sin\left(\dfrac{n \cdot Pi \cdot x}{L}\right), x = \dfrac{L}{4} .. \dfrac{L}{2}\right)}{int\left(\sin^2\left(\dfrac{n \cdot Pi \cdot x}{L}\right), x = 0 .. L\right)}$ assuming$(L > 0, n > 0, n, integer)$

$$kn := -\frac{2M\left(\cos\left(\dfrac{n\pi}{2}\right) - \cos\left(\dfrac{n\pi}{4}\right)\right)}{n\pi} \tag{1}$$

> $an := \dfrac{kn \cdot L}{c \cdot n \cdot Pi}$

$$an := -\frac{2M\left(\cos\left(\dfrac{n\pi}{2}\right) - \cos\left(\dfrac{n\pi}{4}\right)\right)L}{n^2\pi^2 c} \tag{2}$$

> $with(plots):$

> $psum := subs\left(M = 1, L = 10, c = 1, sum\left(an \cdot \sin\left(\dfrac{n \cdot Pi \cdot x}{L}\right) \cdot \sin\left(\dfrac{c \cdot n \cdot Pi \cdot t}{L}\right), n = 1 .. 200\right)\right):$

> $animate(psum, x = 0 .. 50, t = 0 .. 20):$

> $curve := [seq(subs(t = 2 \cdot m, psum), m = 0 .. 10)]:$

> $plot(curve, x = 0 .. 10, thickness = [1, 2, 3, 4, 5, 6], color = blue)$

>