> $kn :=$

$$\frac{int\left(\frac{2\cdot M\cdot x}{L}\cdot\sin\left(\frac{n\cdot \mathrm{Pi}\cdot x}{L}\right), x=0..\frac{L}{2}\right)+int\left(\frac{2\cdot M\cdot (L-x)}{L}\cdot\sin\left(\frac{n\cdot \mathrm{Pi}\cdot x}{L}\right), x=\frac{L}{2}..L\right)}{int\left(\sin^2\left(\frac{n\cdot \mathrm{Pi}\cdot x}{L}\right), x=0..L\right)}$$

$$kn := \frac{1}{L\left(n\pi-\cos(n\pi)\sin(n\pi)\right)}\left(2\left(-\frac{L\left(n\pi\cos\left(\frac{n\pi}{2}\right)-2\sin\left(\frac{n\pi}{2}\right)\right)M}{\pi^2 n^2}+\frac{ML\left(n\pi\cos\left(\frac{n\pi}{2}\right)-2\sin(n\pi)+2\sin\left(\frac{n\pi}{2}\right)\right)}{\pi^2 n^2}\right)\pi n\right) \quad (1)$$

> $simplify(kn)$

$$-\frac{8M\left(\cos\left(\frac{n\pi}{2}\right)-1\right)\sin\left(\frac{n\pi}{2}\right)}{n\pi\left(n\pi-\cos(n\pi)\sin(n\pi)\right)} \quad (2)$$

> $kn := simplify(kn)$:

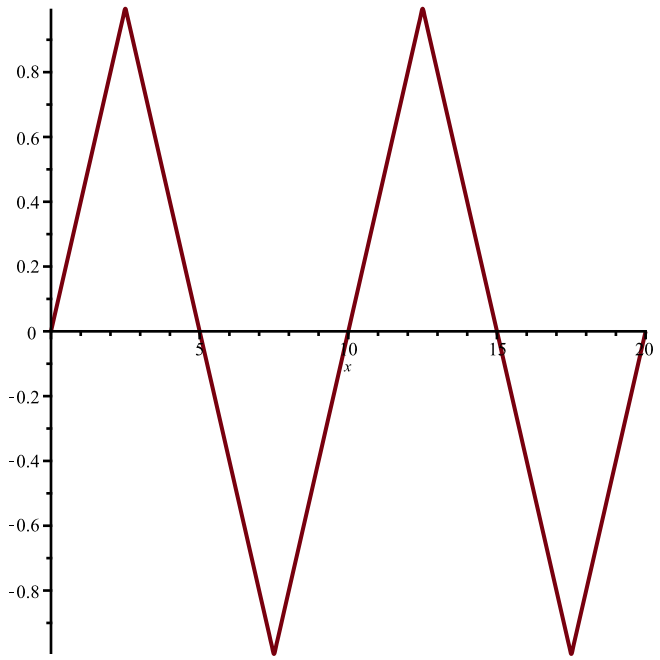
> $an := \frac{kn\cdot L}{c\cdot n\cdot \mathrm{Pi}}$:

> $with(plots)$:

> $psum := subs\left(M=1, L=5, c=1, sum\left(kn\cdot\sin\left(\frac{n\cdot \mathrm{Pi}\cdot x}{L}\right), n=1..100\right)\right)$:

> $curves := \{seq(subs(t=2\cdot m, psum), m=0..10)\}$:

> $plot(curves, x=0..20)$



>

>