> $a(n, x, t) := \dfrac{2}{\text{Pi}} \cdot \dfrac{\left((-1)^n - 1\right)}{n} \cdot \sin(n \cdot x) \cdot \exp\left(-n^2 \cdot t\right)$

$$a := (n, x, t) \rightarrow \frac{2\left((-1)^n - 1\right)\sin(nx)\,e^{-n^2 t}}{\pi n} \tag{1}$$

> $S(N, x, t) := sum(a(n, x, t), n = 1 .. N)$

$$S := (N, x, t) \rightarrow \sum_{n=1}^{N} a(n, x, t) \tag{2}$$

> $plot(S(5, x, 0), x = 0 .. 2\,\text{Pi})$

>
>
>
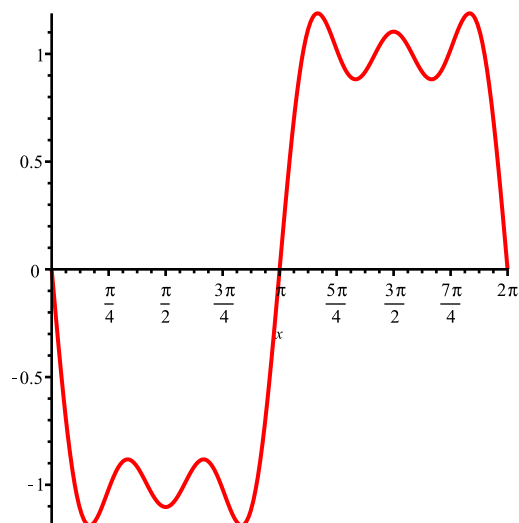
> $plot(S(500, x, 0), x = 0 .. 2\,\text{Pi})$
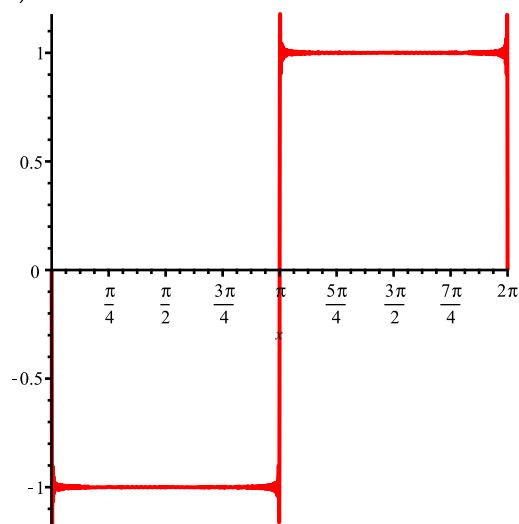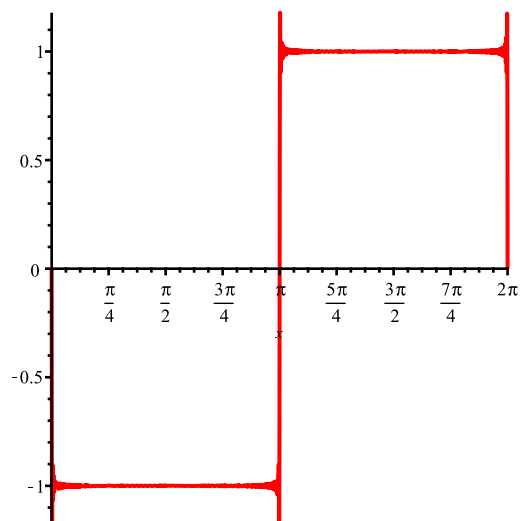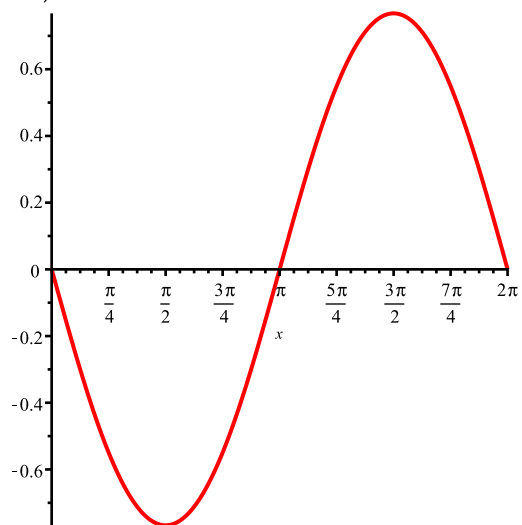

> $plot(S(500, x, 0), x = 0 .. 2\,\text{Pi})$

> $plot(S(500, x, 0.00001), x = 0 .. 2 \text{ Pi})$

>
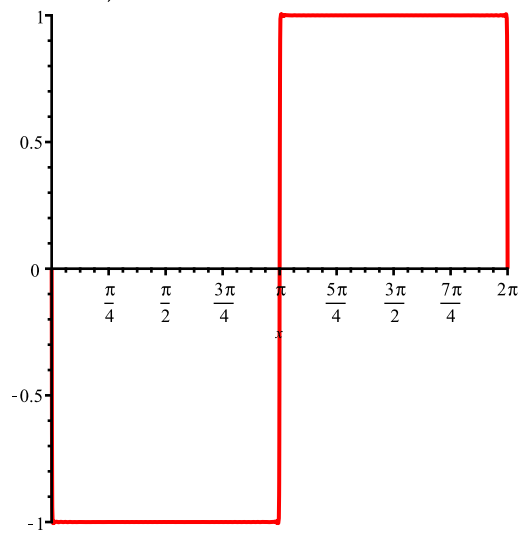
> $plot(S(500, x, 0.5), x = 0 .. 2 \text{ Pi})$

> $plot(S(500, x, 10), x = 0 .. 2 \text{ Pi})$
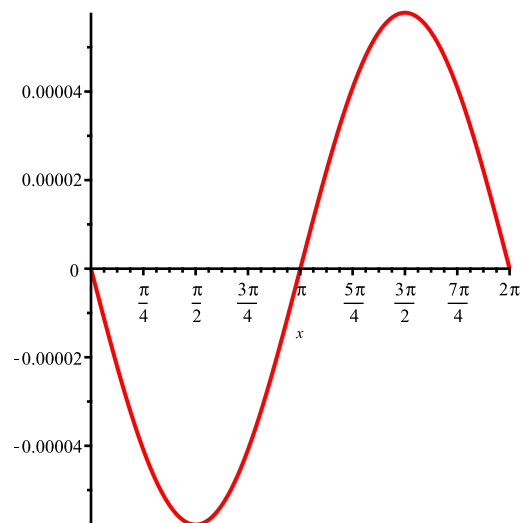
> $plot(S(500, x, 100), x = 0 .. 2\,\mathrm{Pi})$

> $plot(S(500, x, 1000), x = 0 .. 2\,\mathrm{Pi})$

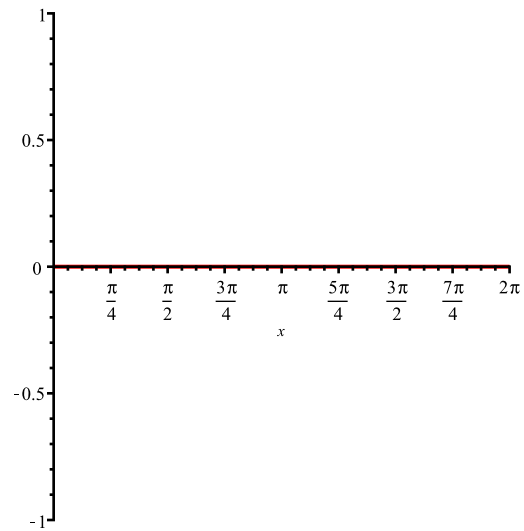
>