

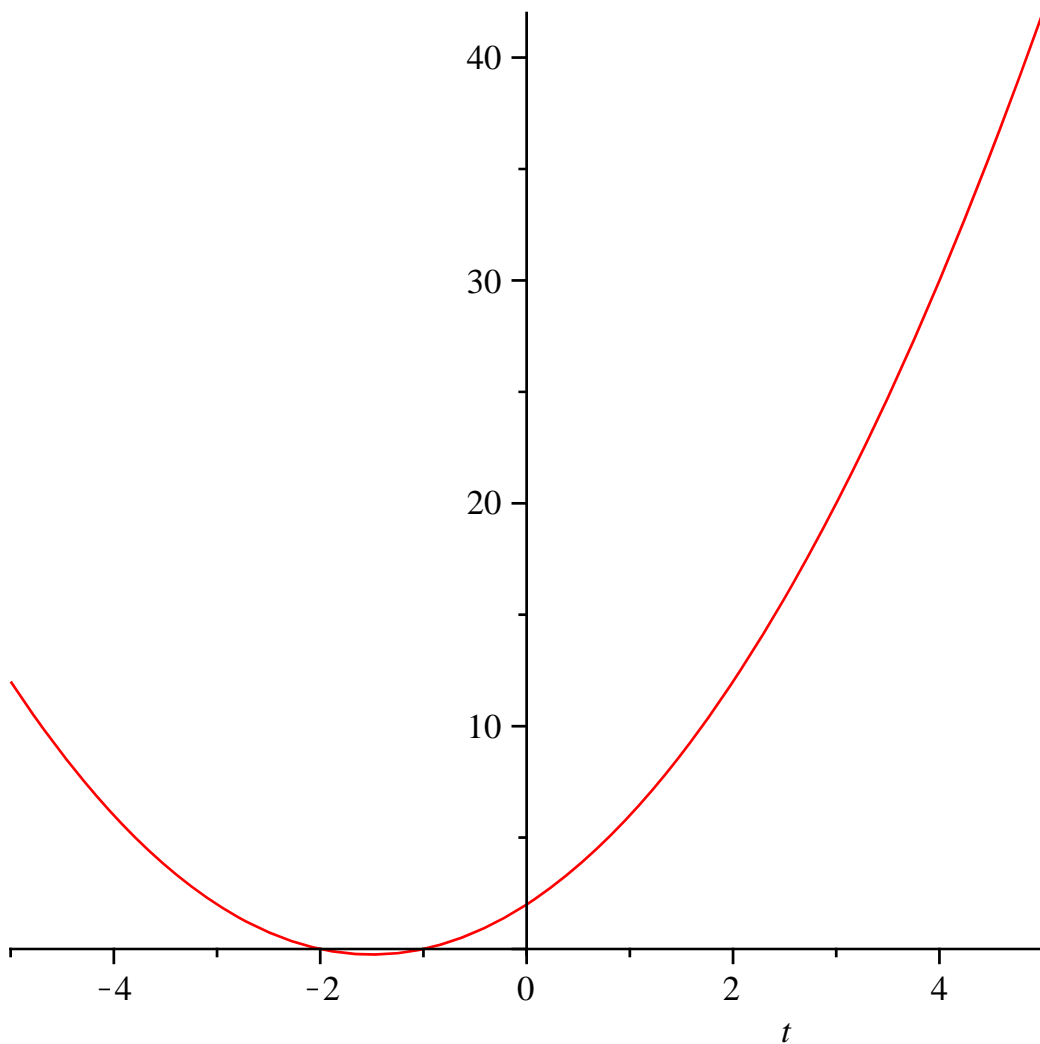
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[> restart
[> f := 2·Heaviside(t + 2) - 2·Heaviside(t + 1) + Heaviside(t - 1) - Heaviside(t - 2);
    plot(f, t = -4 .. 4)
[> L := 3
[> a0 :=  $\left(\frac{1}{L}\right) \cdot \text{int}(f, t = -L..L)$ ; c :=  $\frac{a_0}{2}$ 
[> an :=  $\left(\frac{1}{L}\right) \cdot \text{int}\left(f \cdot \cos\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right), t = -L..L\right)$ 
[> bn :=  $\left(\frac{1}{L}\right) \cdot \text{int}\left(f \cdot \sin\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right), t = -L..L\right)$ 
[> STF := c + Sum $\left(a_n \cdot \cos\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right) + b_n \cdot \sin\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right), n = 1 .. \text{infinity}\right)$ 
[> STF500 := c + Sum $\left(a_n \cdot \cos\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right) + b_n \cdot \sin\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right), n = 1 .. 500\right)$  :
[> plot(STF500, t = -2.9 .. 2.9)
[> plot(f, t = -2.9 .. 2.9)
[> plot([f, STF500], t = -1.6 .. -1.4)
[> STF1000 := c + Sum $\left(a_n \cdot \cos\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right) + b_n \cdot \sin\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right), n = 1 .. 1000\right)$  :
[> plot(STF1000, t = -3 .. 3)
[> plot([f, STF1000], t = -1.6 .. -1.4)
[> restart
[> f := 5·exp $\left(\frac{t}{2}\right)$ 
[> plot(f, t = -2 .. 2, y = 0 .. 15)
[> L := 3
[> a0 :=  $\left(\frac{1}{L}\right) \cdot \text{int}(f, t = -L..L)$ ; c :=  $\frac{a_0}{2}$ 
[> an :=  $\left(\frac{1}{L}\right) \cdot \text{int}\left(f \cdot \cos\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right), t = -L..L\right)$ 
[> bn :=  $\left(\frac{1}{L}\right) \cdot \text{int}\left(f \cdot \sin\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right), t = -L..L\right)$ 
[> STF := c + Sum $\left(a_n \cdot \cos\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right) + b_n \cdot \sin\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right), n = 1 .. \text{infinity}\right)$ 
[> STF1000 := c + Sum $\left(a_n \cdot \cos\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right) + b_n \cdot \sin\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right), n = 1 .. 1000\right)$  :
[> plot(STF1000, t = -2 .. 2, y = 0 .. 15)
[> plot([f, STF1000], t = -1.6 .. -1.4)
[> restart
[> f := t·2 + 3·t + 2
[> plot(f, t = -5 .. 5)

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$$f := t^2 + 3t + 2$$

(1)



> $L := 5$

$L := 5$

(2)

> $a_0 := \left(\frac{1}{L} \right) \cdot \text{int}(f, t = -L..L); c := \frac{a_0}{2}$

$a_0 := \frac{62}{3}$

$c := \frac{31}{3}$

(3)

> $a_n := \left(\frac{1}{L} \right) \cdot \text{int} \left(f \cdot \cos \left(\frac{n \cdot \text{Pi} \cdot t}{L} \right), t = -L..L \right)$

$a_n := \frac{2 \left(-50 \sin(n \pi) + 27 n^2 \pi^2 \sin(n \pi) + 50 n \pi \cos(n \pi) \right)}{n^3 \pi^3}$

(4)

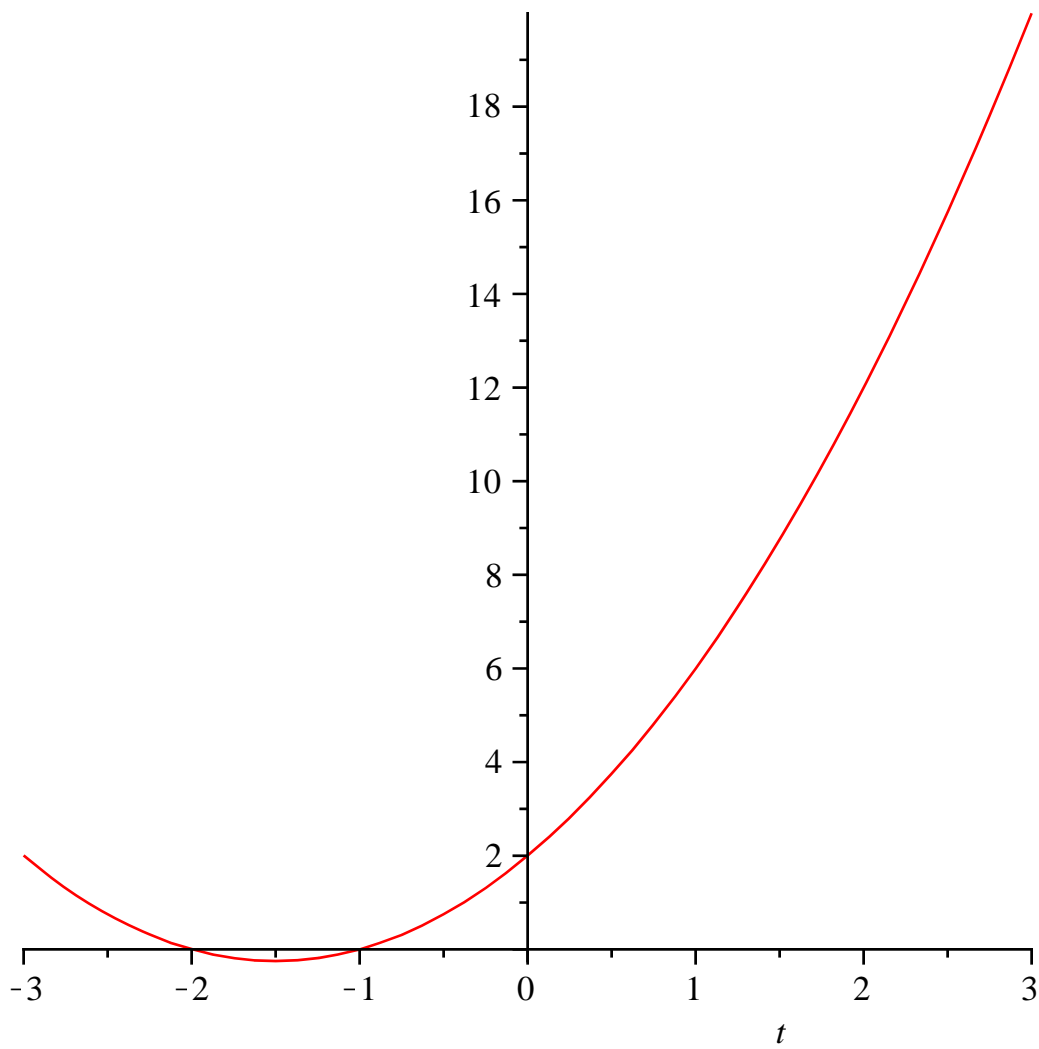
> $b_n := \left(\frac{1}{L} \right) \cdot \text{int} \left(f \cdot \sin \left(\frac{n \cdot \text{Pi} \cdot t}{L} \right), t = -L..L \right)$

$b_n := - \frac{30 \left(n \pi \cos(n \pi) - \sin(n \pi) \right)}{n^2 \pi^2}$

(5)

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=>  
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=>  
>
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>  $STF_{1000} := c + \text{Sum}\left(a_n \cdot \cos\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right) + b_n \cdot \sin\left(\frac{n \cdot \text{Pi} \cdot t}{L}\right), n = 1 \dots 1000\right) :$   
>  $\text{plot}(STF_{1000}, t = -3 \dots 3)$ 
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>  $\text{plot}([f, STF_{1000}], t = -1.6 \dots -1.4)$ 
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