```
> # CESARO SUMMATION OF A SQUARE WAVE
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```
> bodd := k -> (4/Pi)*(1/(2*k+1));
```

$$bodd := k \rightarrow \frac{4}{\pi\,(2\,k+1)} \tag{1}$$

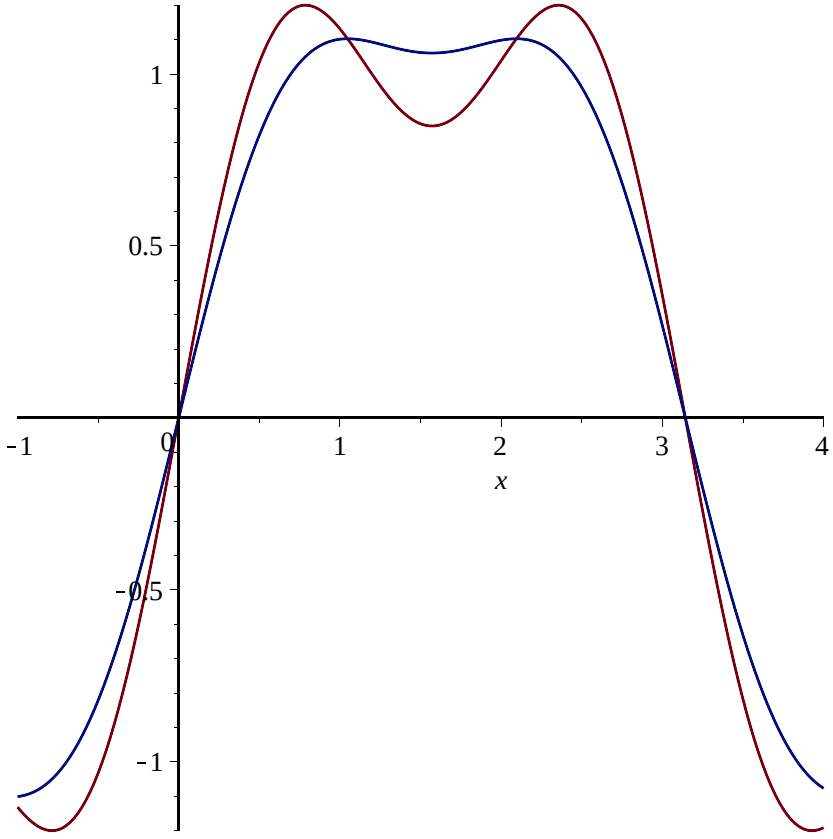
```
> partialsum := K -> sum(bodd(k)*sin((2*k+1)*x), k=0..K);
```

$$partialsum := K \rightarrow \sum_{k=0}^{K} bodd(k)\,\sin((2\,k+1)\,x) \tag{2}$$

```
> mean := M -> (1/(M+1))*sum(partialsum(K), K=0..M);
```

$$mean := M \rightarrow \frac{\sum_{K=0}^{M} partialsum(K)}{M+1} \tag{3}$$

```
> plot([partialsum(1), mean(1)], x=-1..4);
```

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>
> plot([partialsum(4), mean(4)], x=-1..4);
```

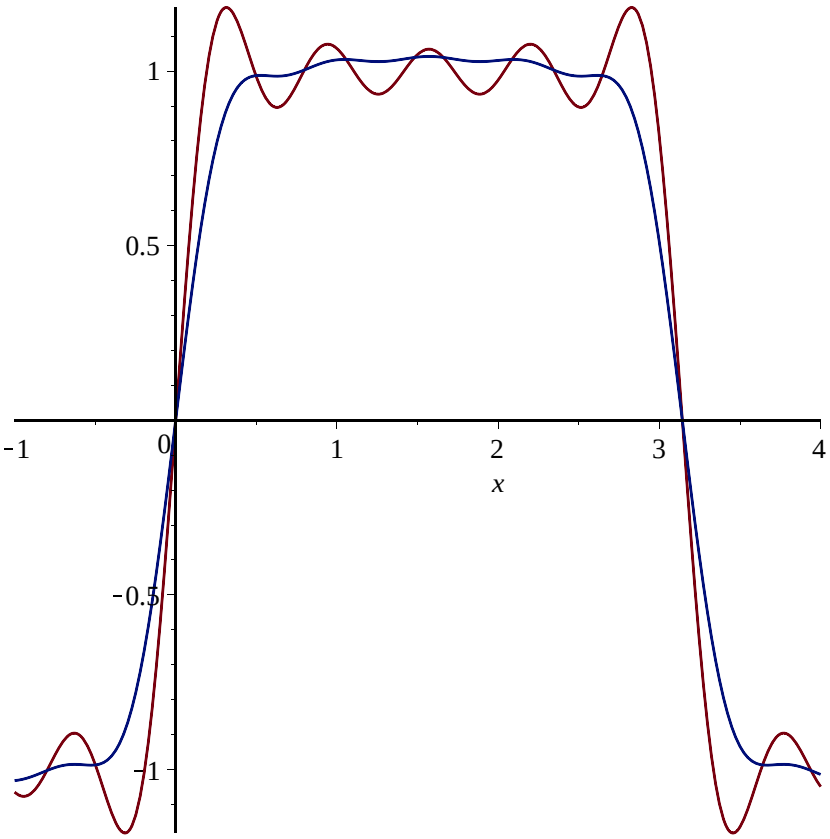


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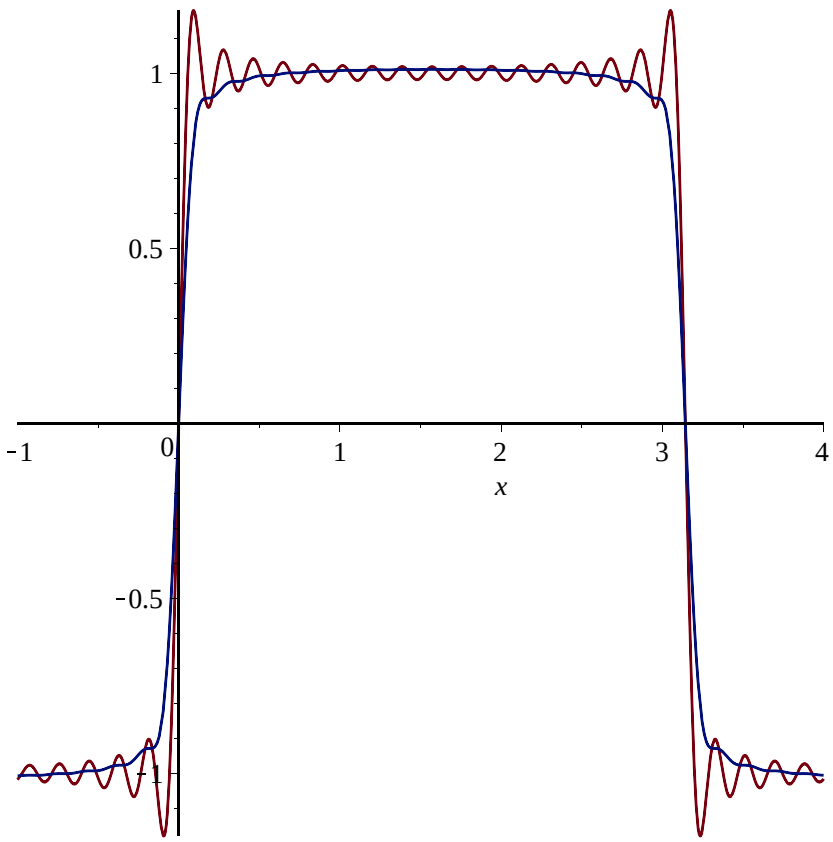
> # Qualitatively, the Cesaro mean looks more like a square wave
  than the partial sum does.
> # Notice, however, that the Cesaro approximation is NUMERICALLY
  WORSE close to the discontinuity.

> plot([partialsum(16), mean(16)], x=-1..4);
```

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> # REMARK:  What we're doing is not the smartest way to organize
  the calculation from the point of view of minimizing computer
  time.  We are calculating the same partial sums over and over
  again.
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> plot([partialsum(64), mean(64)], x=-1..4);
```

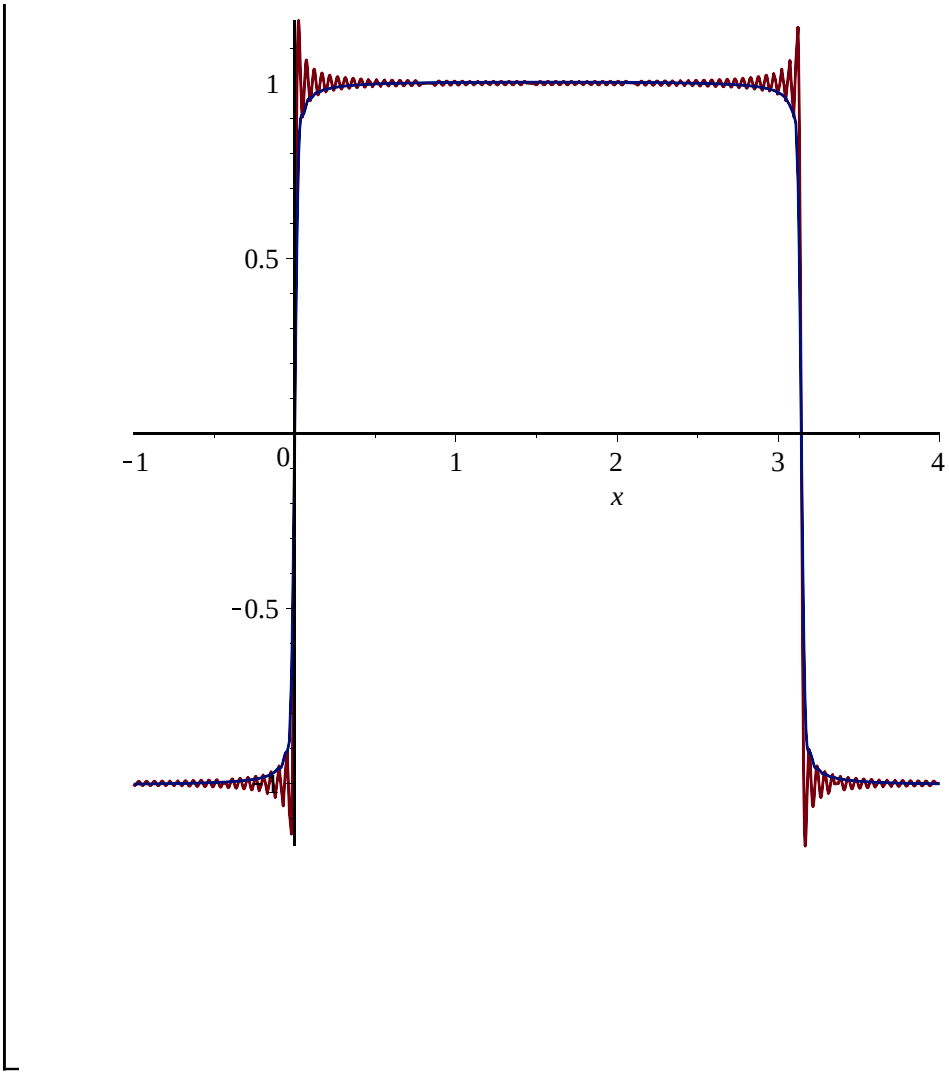
1
0.5
-0.5
-1
0
1
2
3
4
x