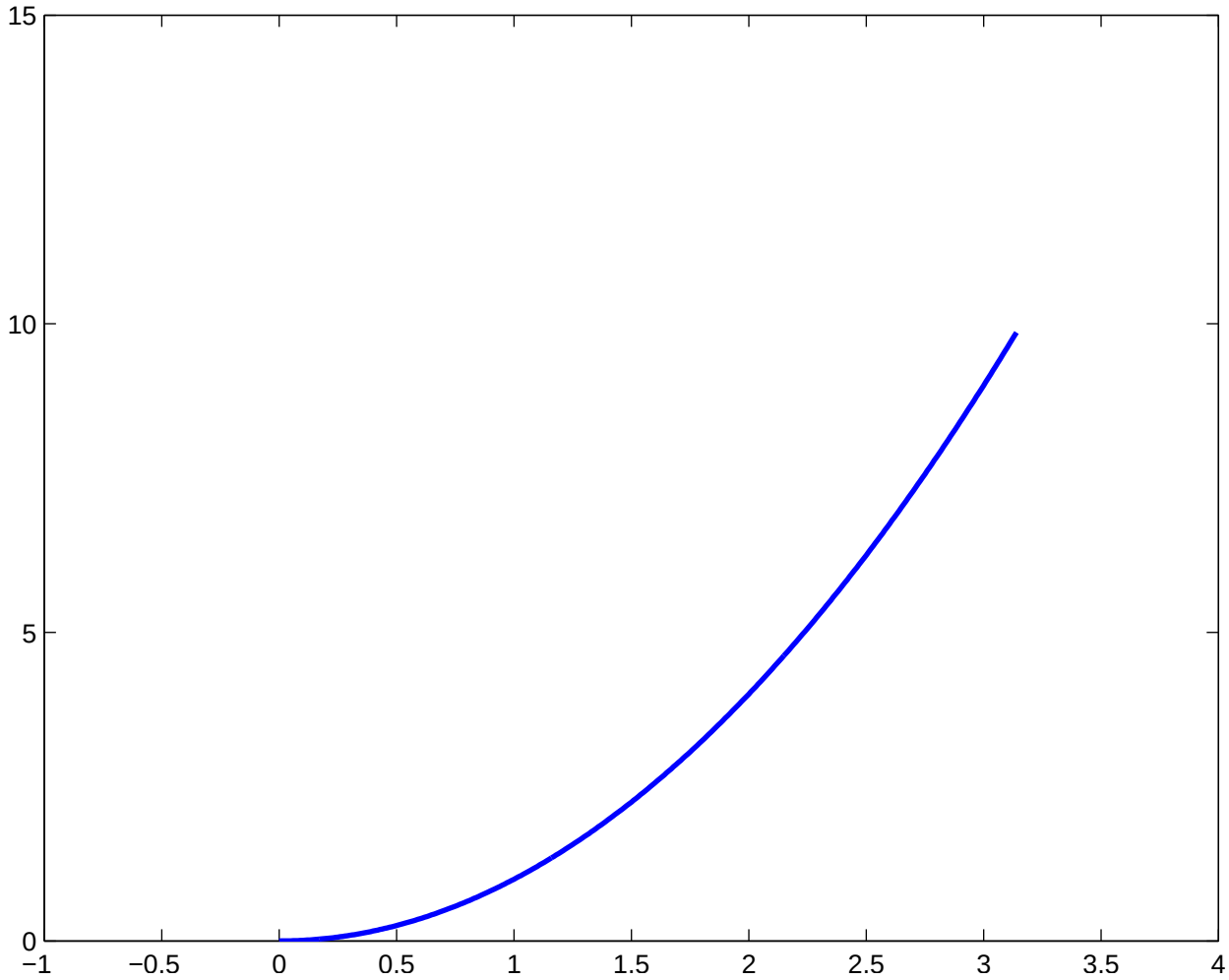
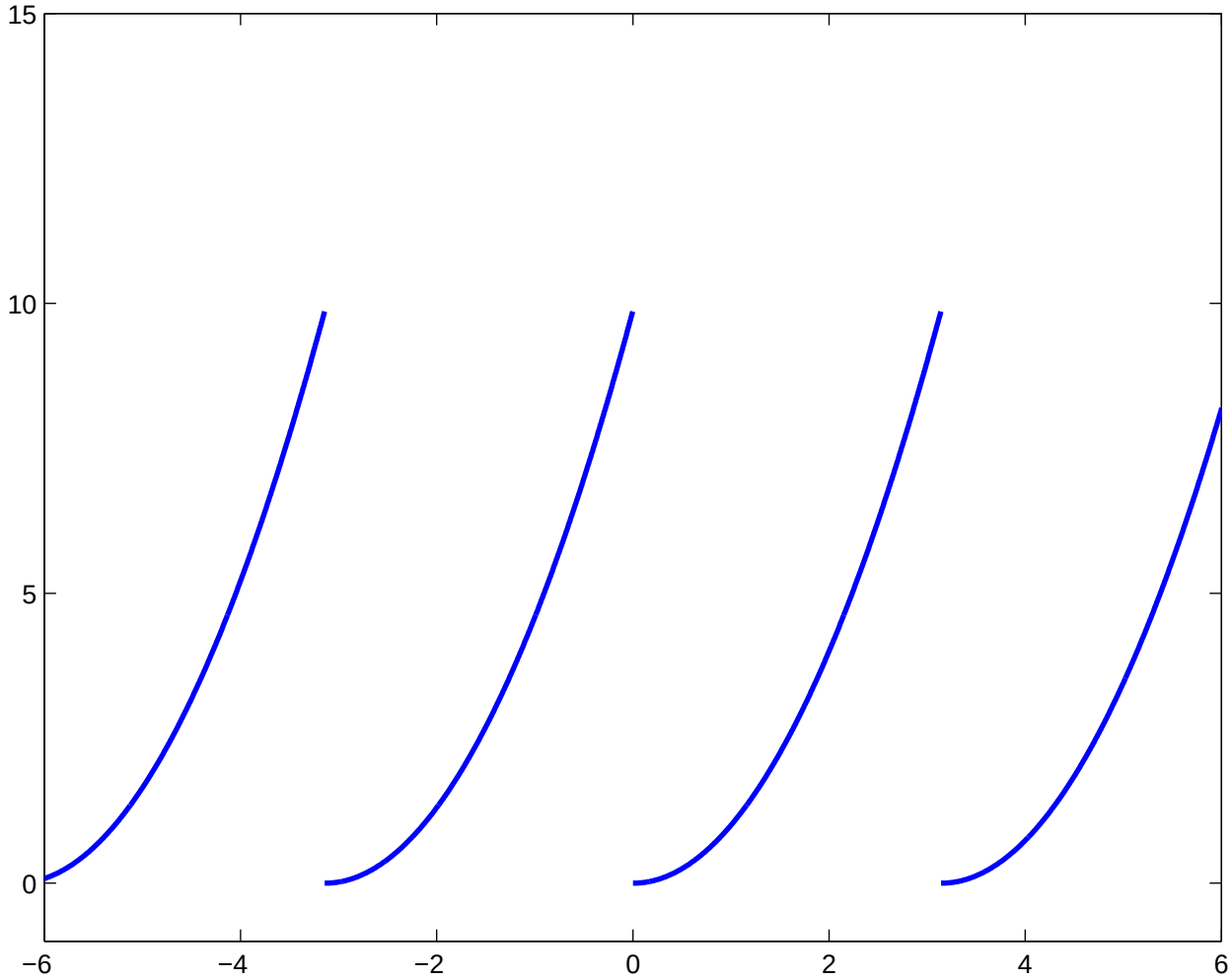
$$f(x) = x^2 \text{ for } x \in [0, \pi]$$



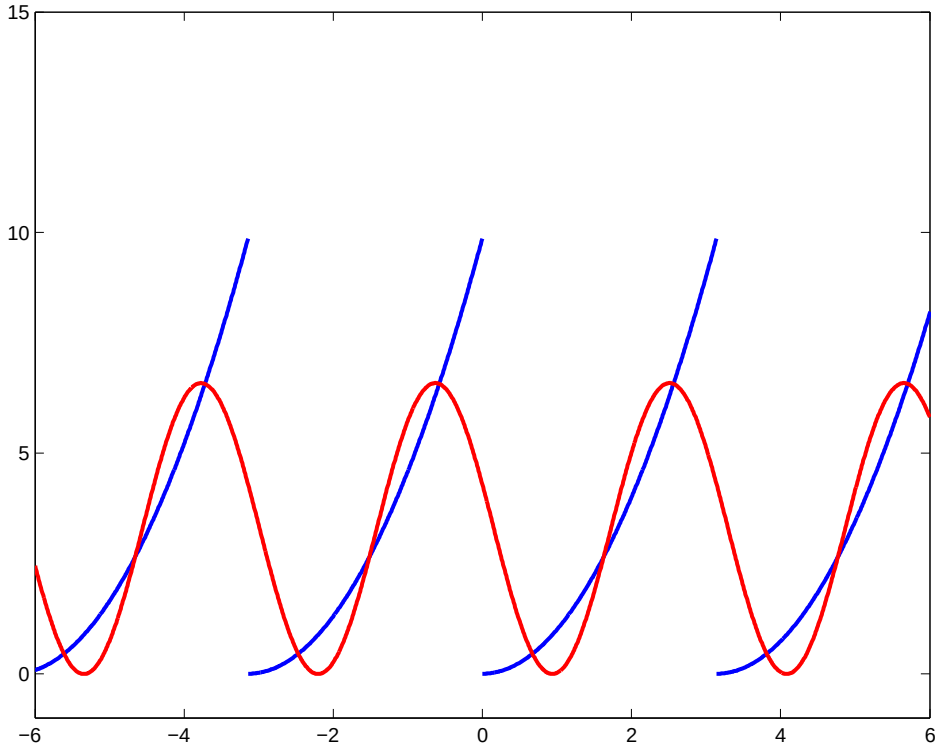
π-periodisk utvidelse

$$f(x+\pi) = f(x) \text{ for alle } x$$



π-periodisk utvidelse - Fourier rekken

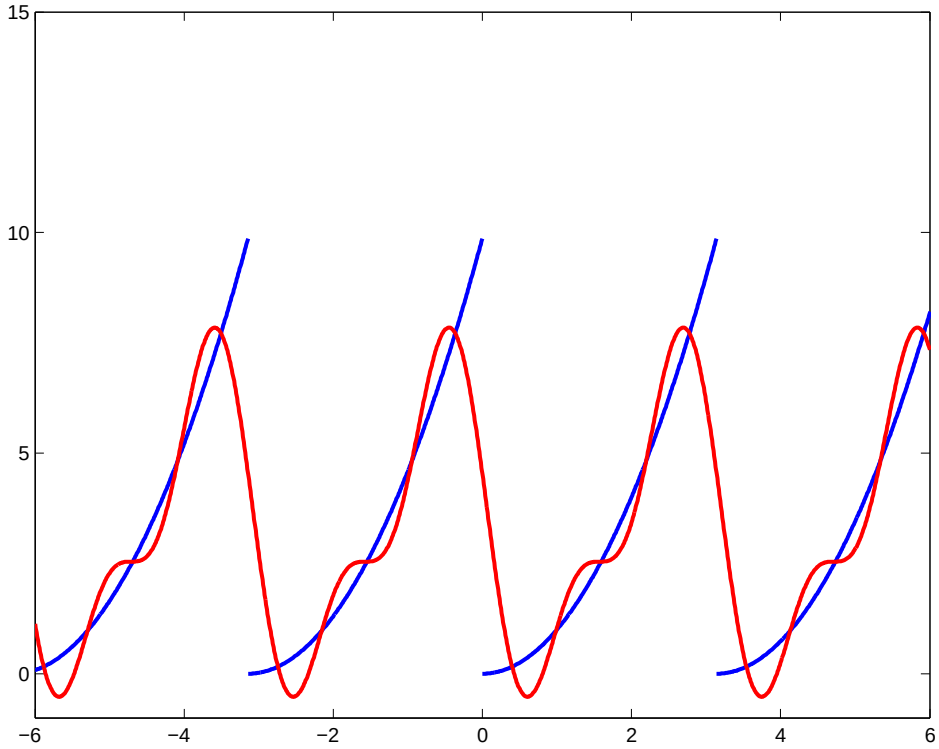
$$S_N f(x) = a_0 + \sum_{n=1}^{N} a_n \cos(2nx) + b_n \sin(2nx)$$



N=1

π-periodisk utvidelse - Fourier rekken

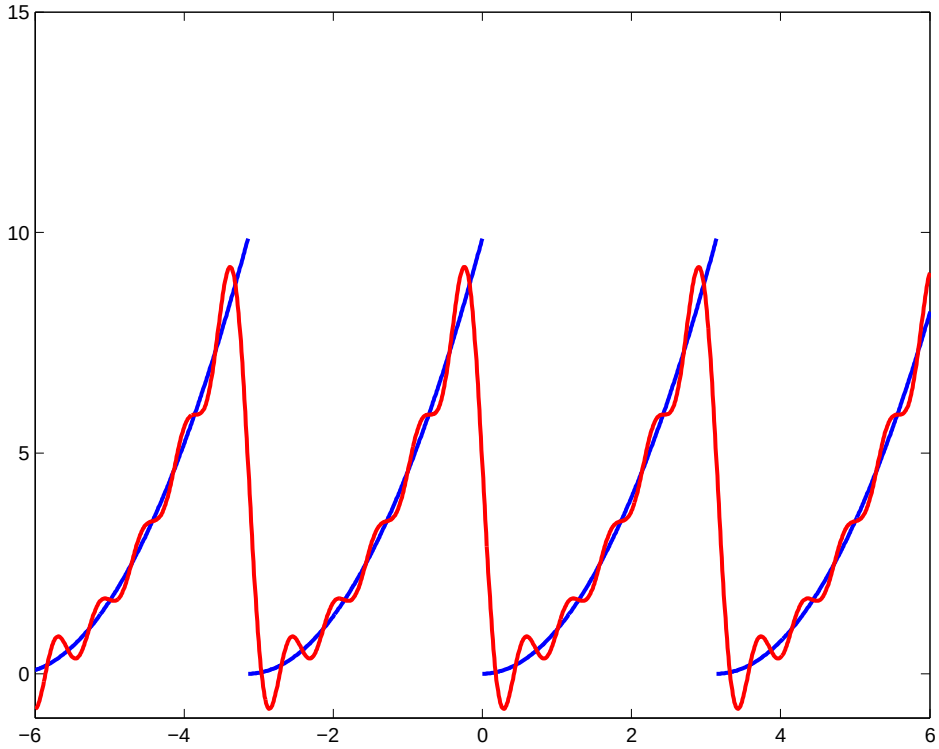
$$S_N f(x) = a_0 + \sum_{n=1}^{N} a_n \cos(2nx) + b_n \sin(2nx)$$



N=2

π-periodisk utvidelse - Fourier rekken

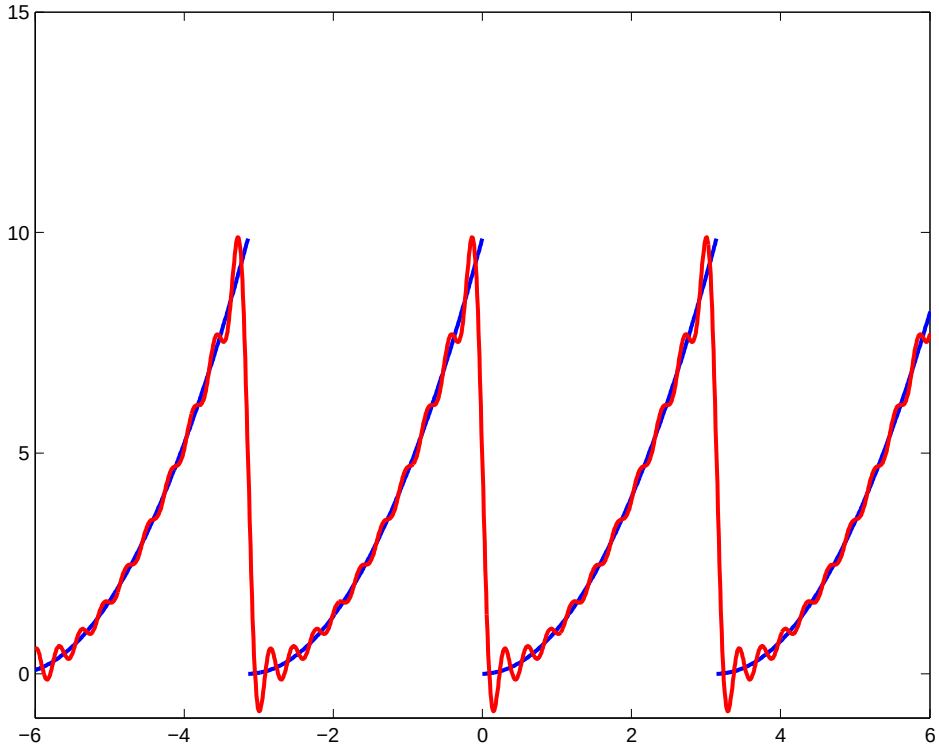
$$S_N f(x) = a_0 + \sum_{n=1}^{N} a_n \cos(2nx) + b_n \sin(2nx)$$



N=5

π-periodisk utvidelse - Fourier rekken

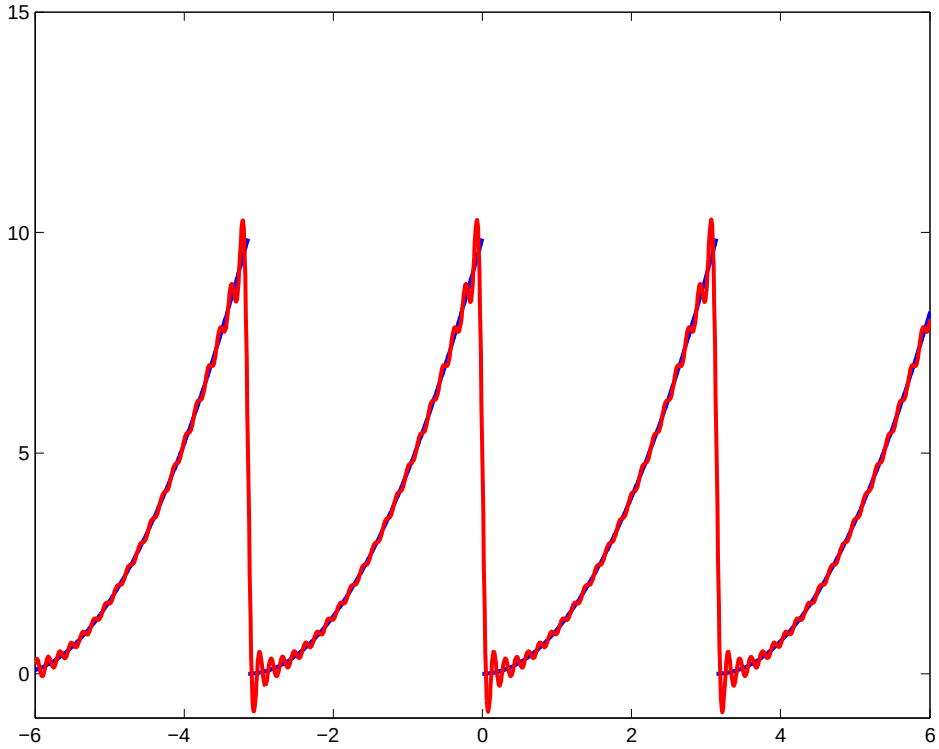
$$S_N f(x) = a_0 + \sum_{n=1}^{N} a_n \cos(2nx) + b_n \sin(2nx)$$



N=10

π-periodisk utvidelse - Fourier rekken

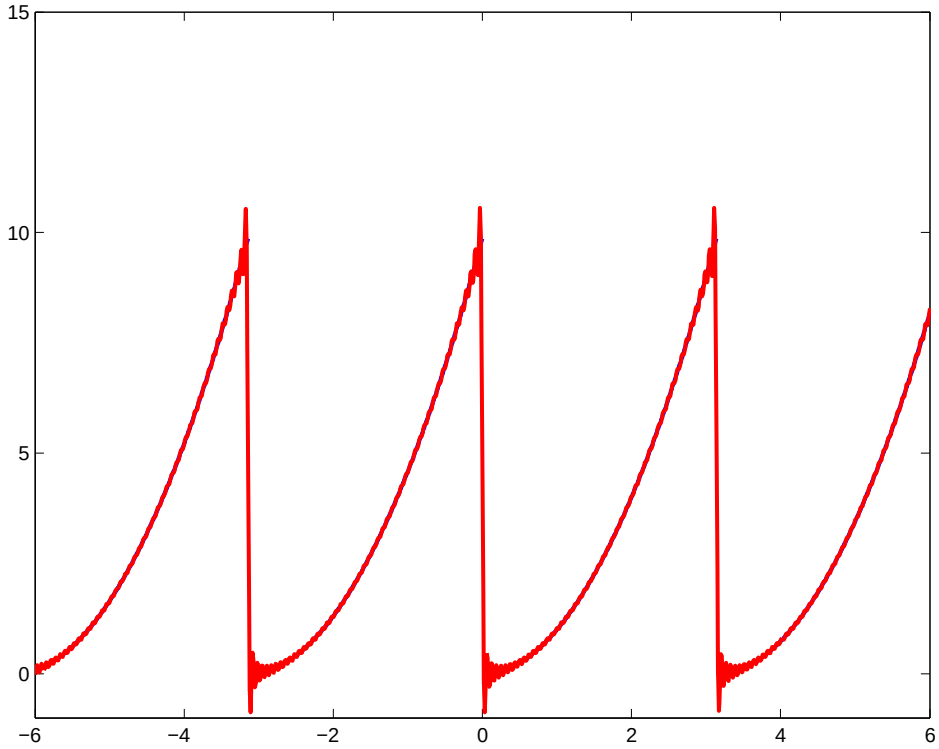
$$S_N f(x) = a_0 + \sum_{n=1}^{N} a_n \cos(2nx) + b_n \sin(2nx)$$



N=20

π-periodisk utvidelse - Fourier rekken

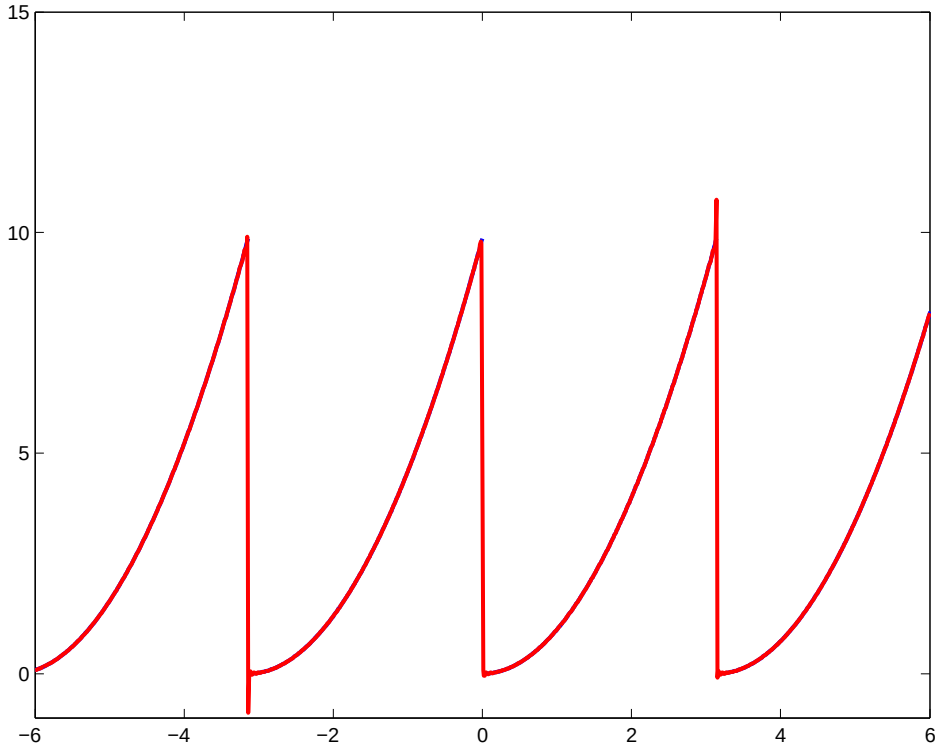
$$S_N f(x) = a_0 + \sum_{n=1}^{N} a_n \cos(2nx) + b_n \sin(2nx)$$



N=50

π-periodisk utvidelse - Fourier rekken

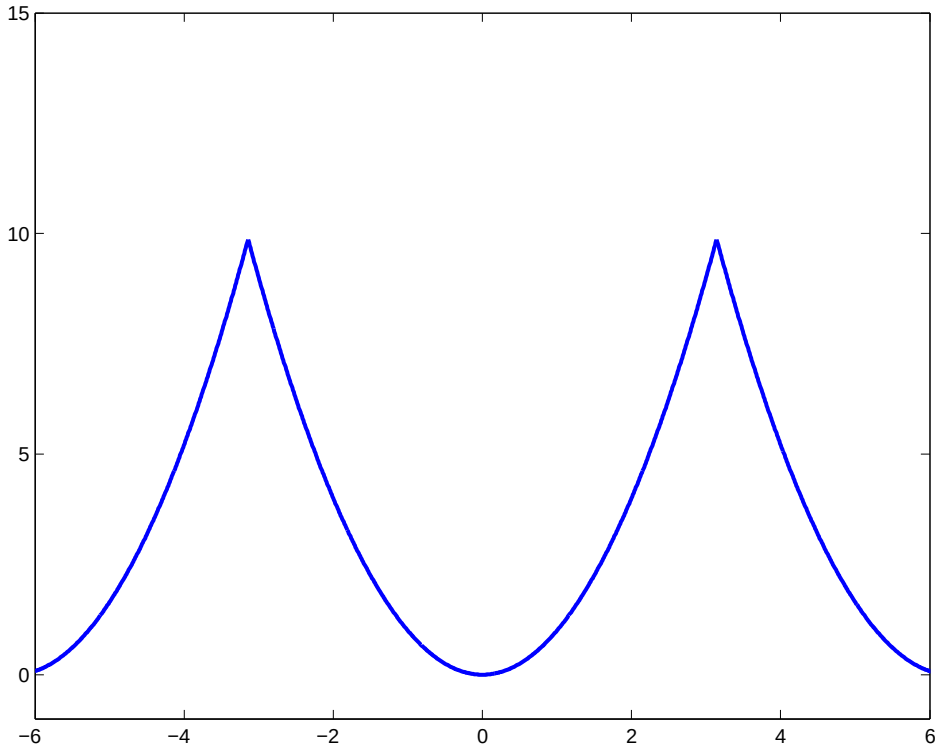
$$S_N f(x) = a_0 + \sum_{n=1}^{N} a_n \cos(2nx) + b_n \sin(2nx)$$



N=1000

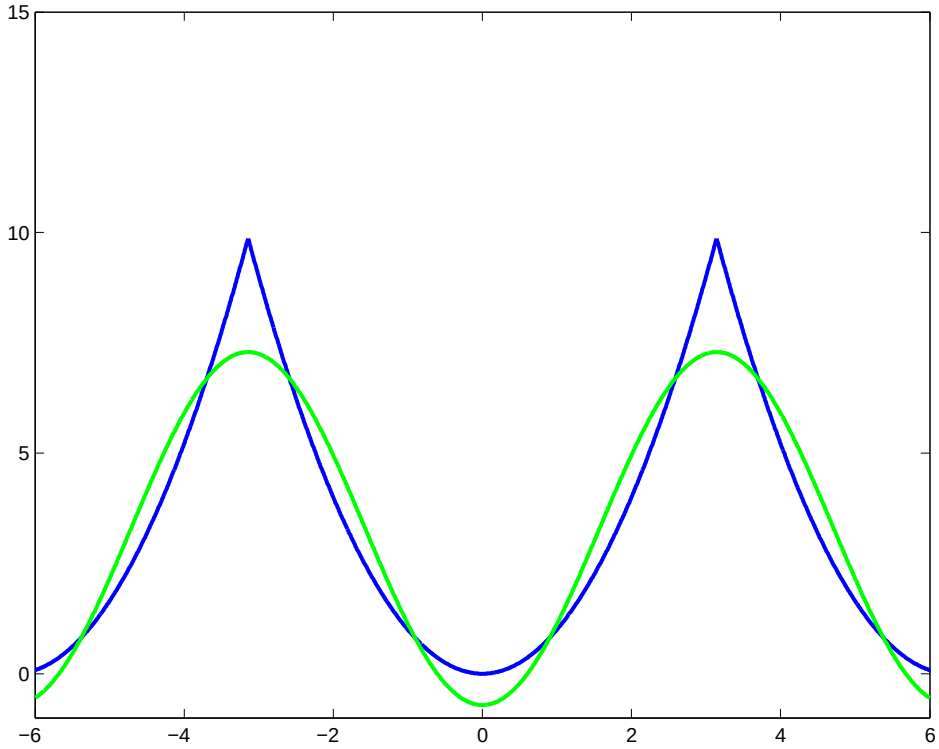
Like utvidelse

$$f(-x) = f(x)$$
$$\text{og } f(x + 2\pi) = f(x) \text{ for alle } x$$



Like utvidelse - cosinus rekken

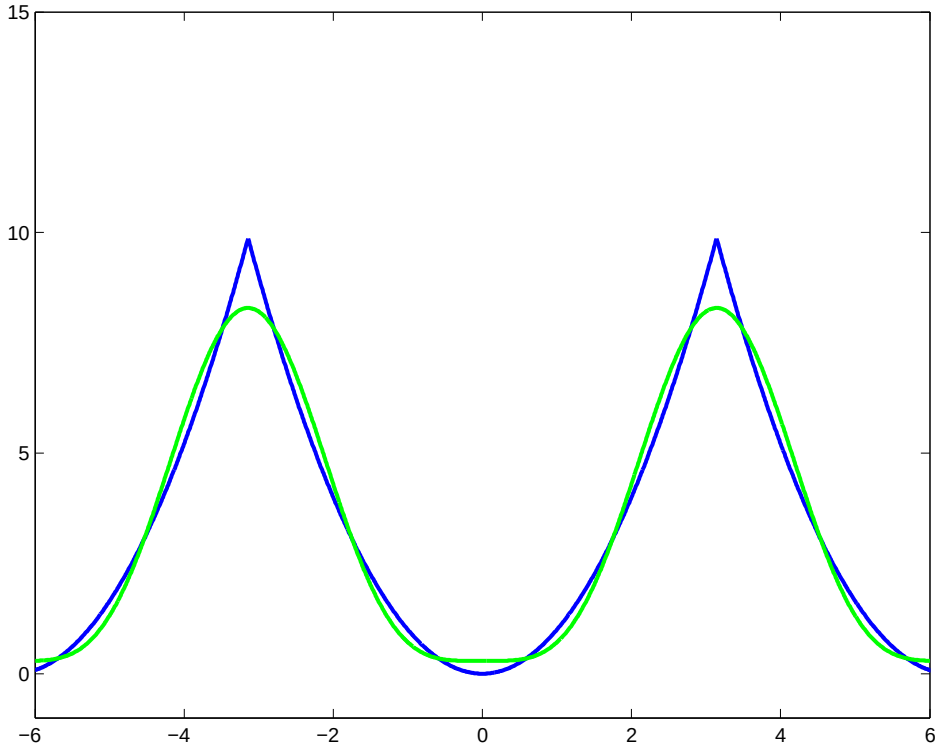
$$S_N f(x) = a_0 + \sum_{n=1}^{N} a_n \cos(nx)$$



N=1

Like utvidelse - cosinus rekken

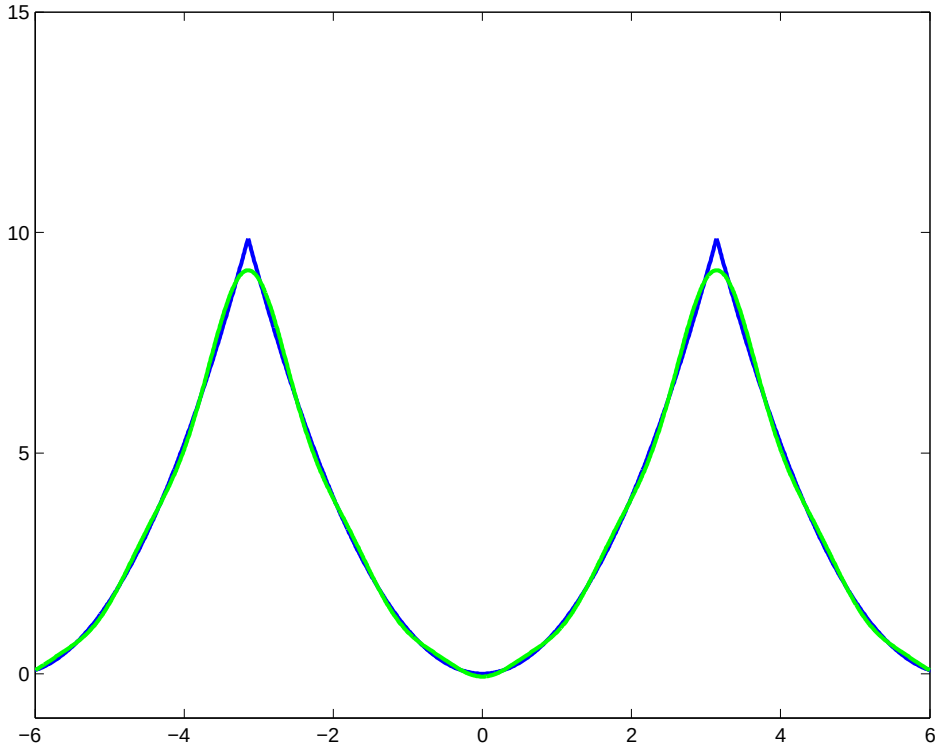
$$S_N f(x) = a_0 + \sum_{n=1}^{N} a_n \cos(nx)$$



N=2

Like utvidelse - cosinus rekken

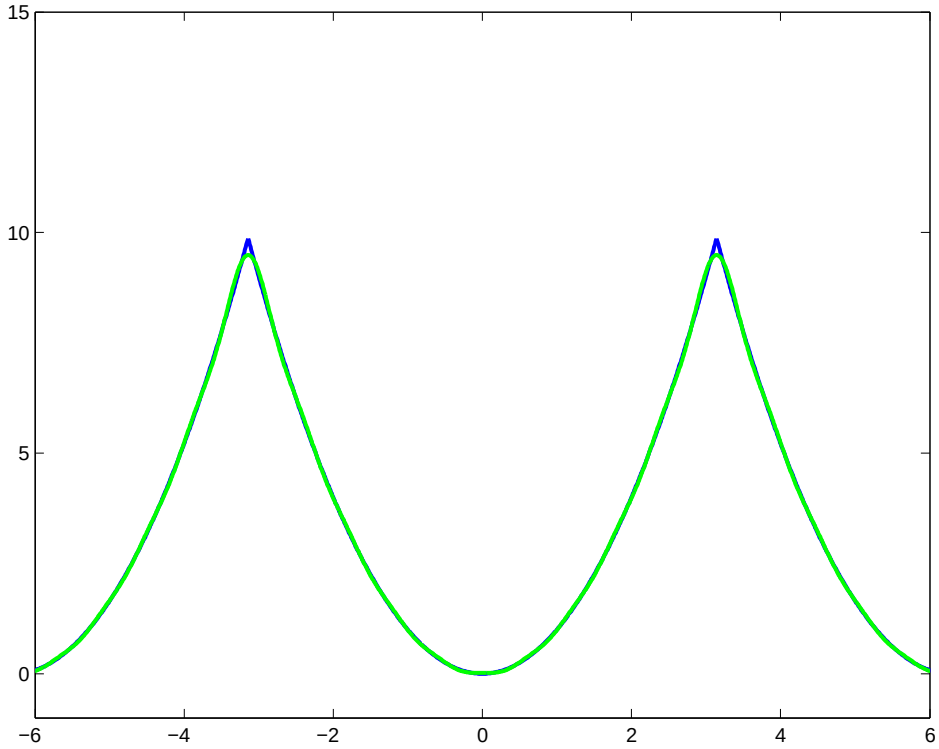
$$S_N f(x) = a_0 + \sum_{n=1}^{N} a_n \cos(nx)$$



N=5

Like utvidelse - cosinus rekken

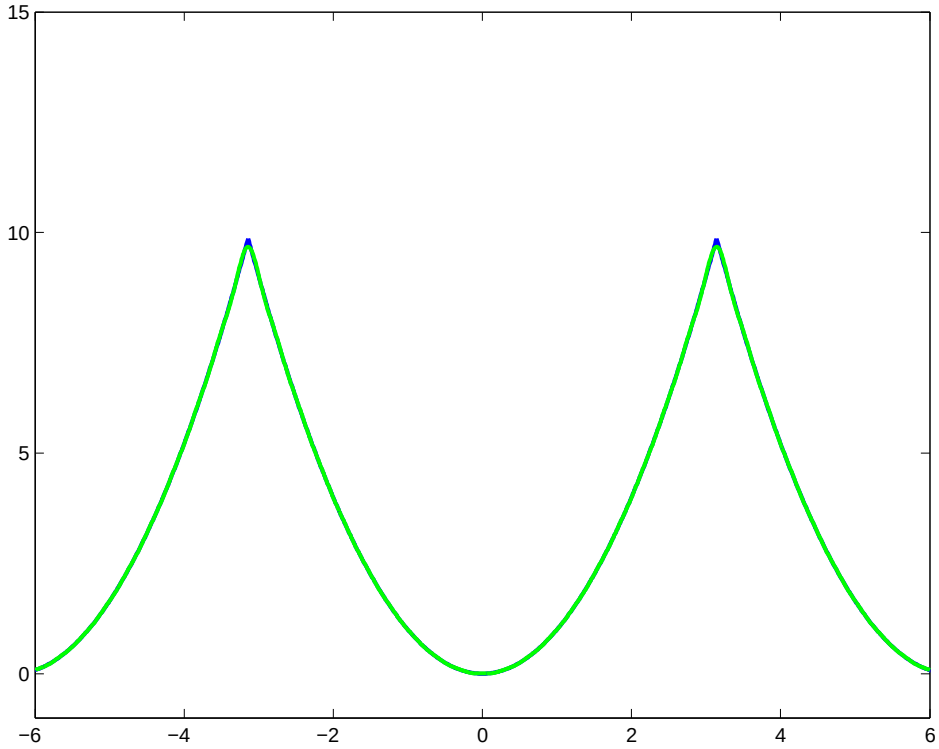
$$S_N f(x) = a_0 + \sum_{n=1}^{N} a_n \cos(nx)$$



N=10

Like utvidelse - cosinus rekken

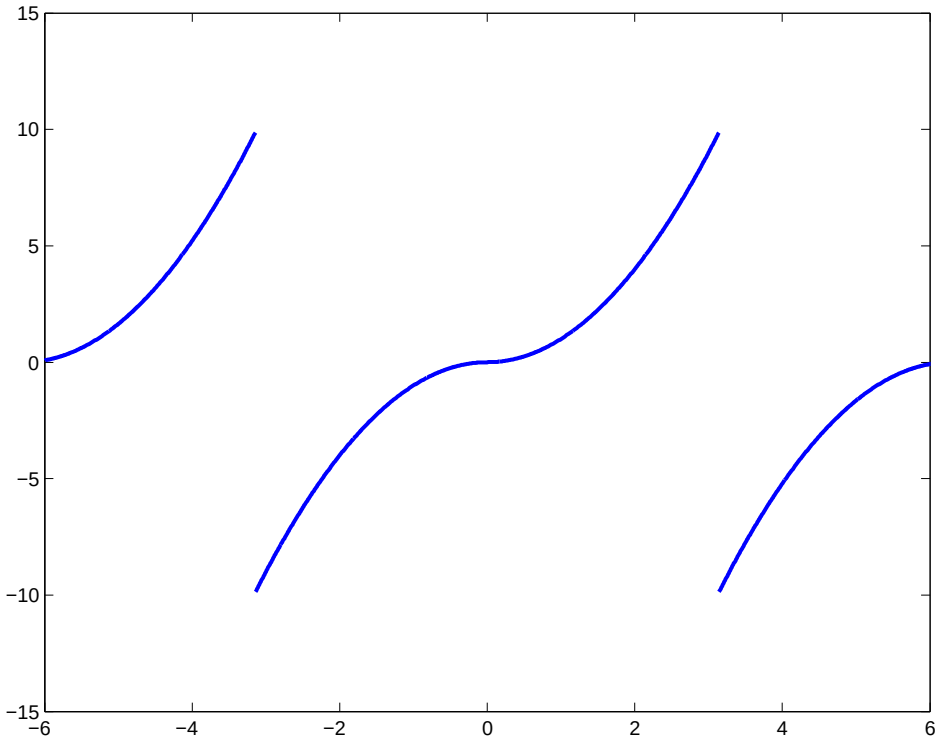
$$S_N f(x) = a_0 + \sum_{n=1}^{N} a_n \cos(nx)$$



N=20

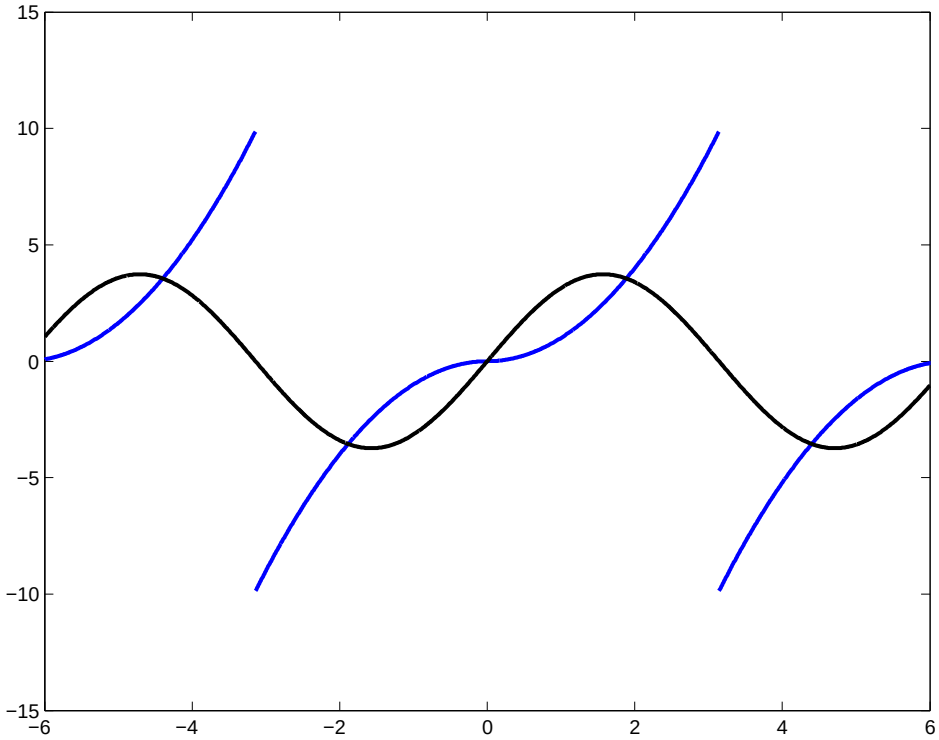
Like utvidelse

$$f(-x) = -f(x)$$
$$\text{og } f(x + 2\pi) = f(x) \text{ for alle } x$$



Odde utvidelse - Sinus rekken

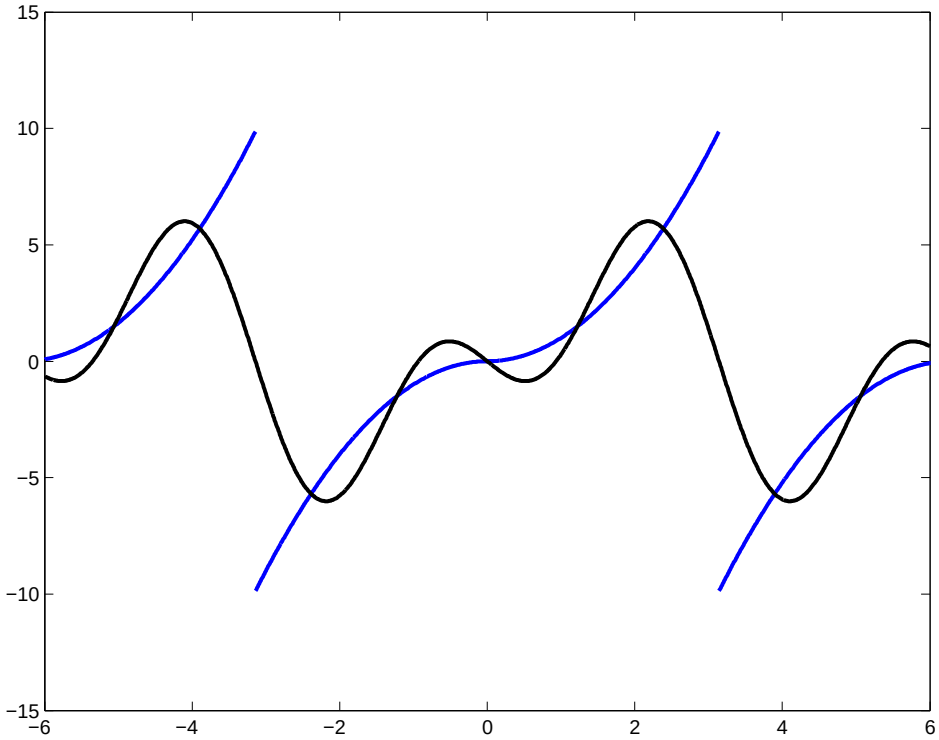
$$S_N f(x) = \sum_{n=1}^{N} b_n \sin(nx)$$



N=1

Odde utvidelse - Sinus rekken

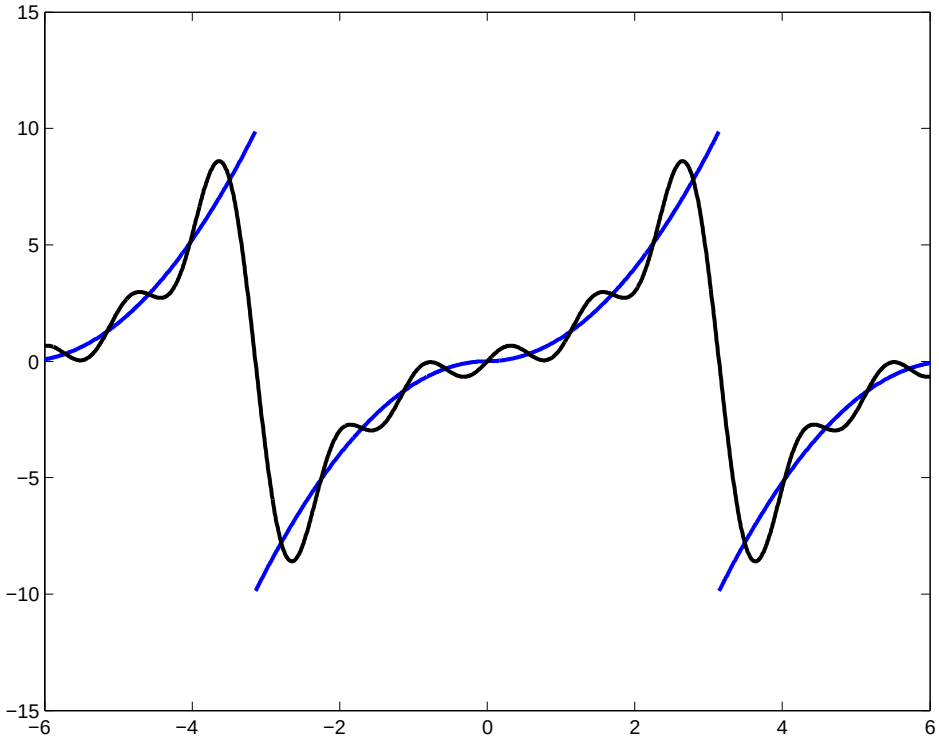
$$S_N f(x) = \sum_{n=1}^{N} b_n \sin(nx)$$



N=2

Odde utvidelse - Sinus rekken

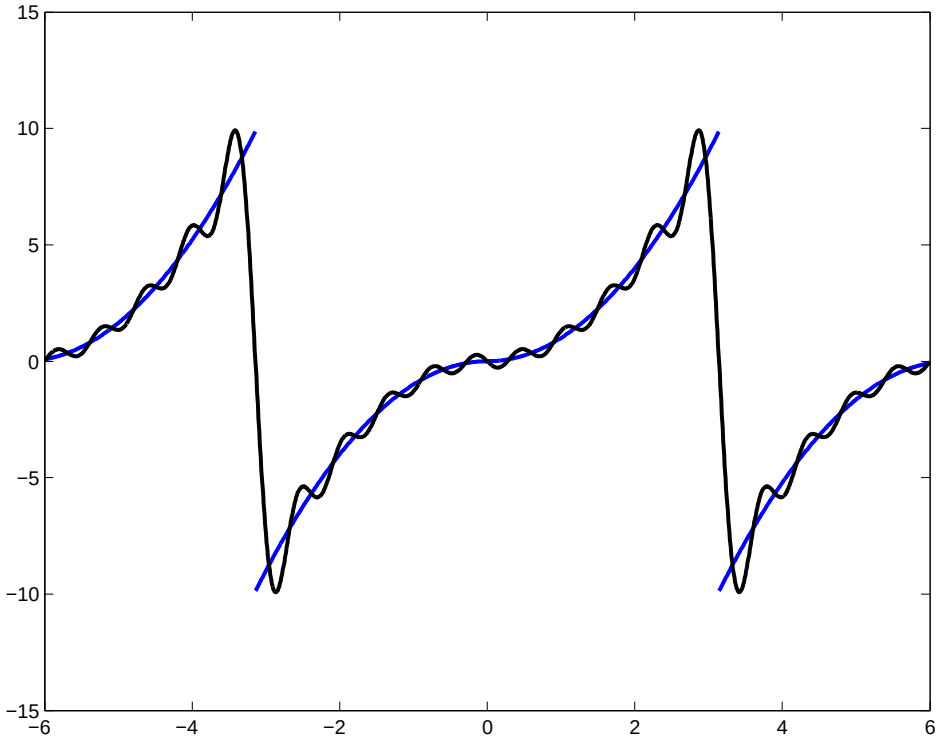
$$S_N f(x) = \sum_{n=1}^{N} b_n \sin(nx)$$



N=5

Odde utvidelse - Sinus rekken

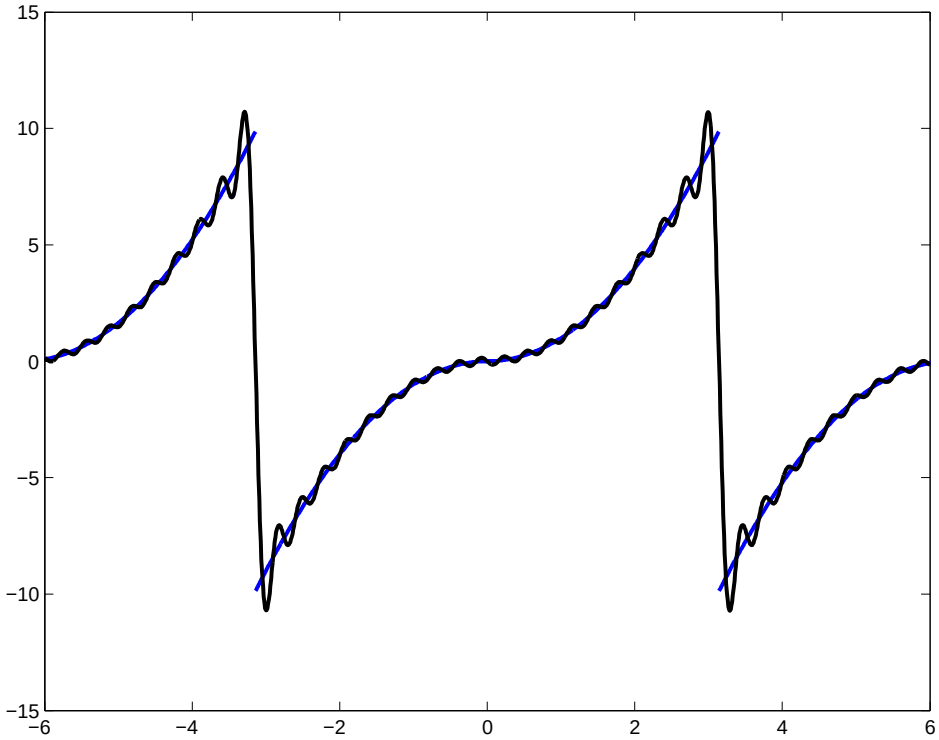
$$S_N f(x) = \sum_{n=1}^{N} b_n \sin(nx)$$



N=10

Odde utvidelse - Sinus rekken

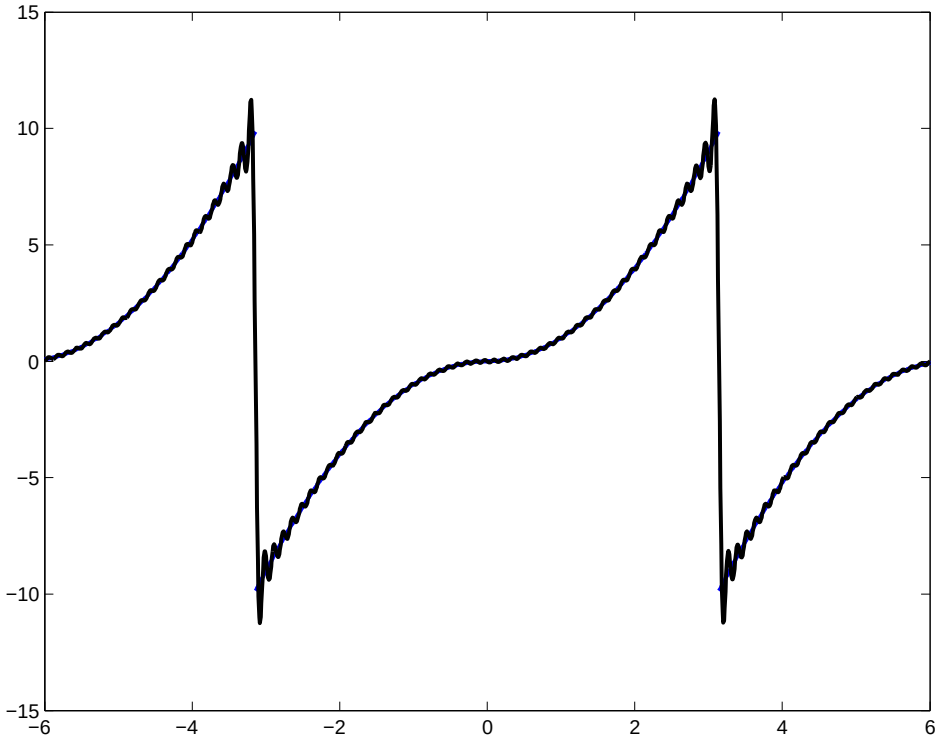
$$S_N f(x) = \sum_{n=1}^{N} b_n \sin(nx)$$



N=20

Odde utvidelse - Sinus rekken

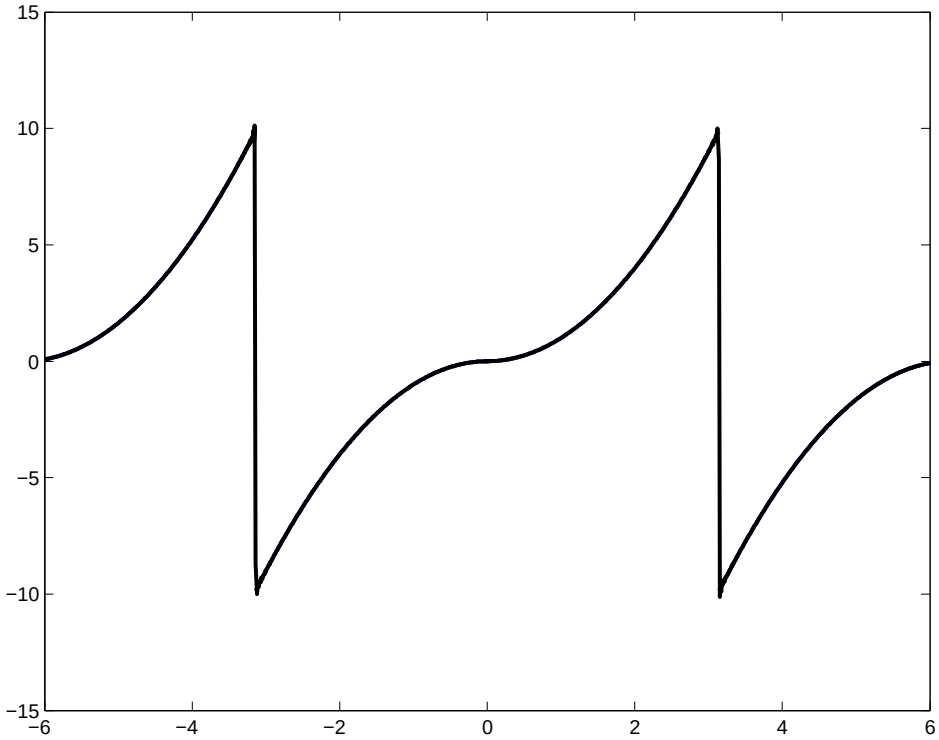
$$S_N f(x) = \sum_{n=1}^{N} b_n \sin(nx)$$



N=50

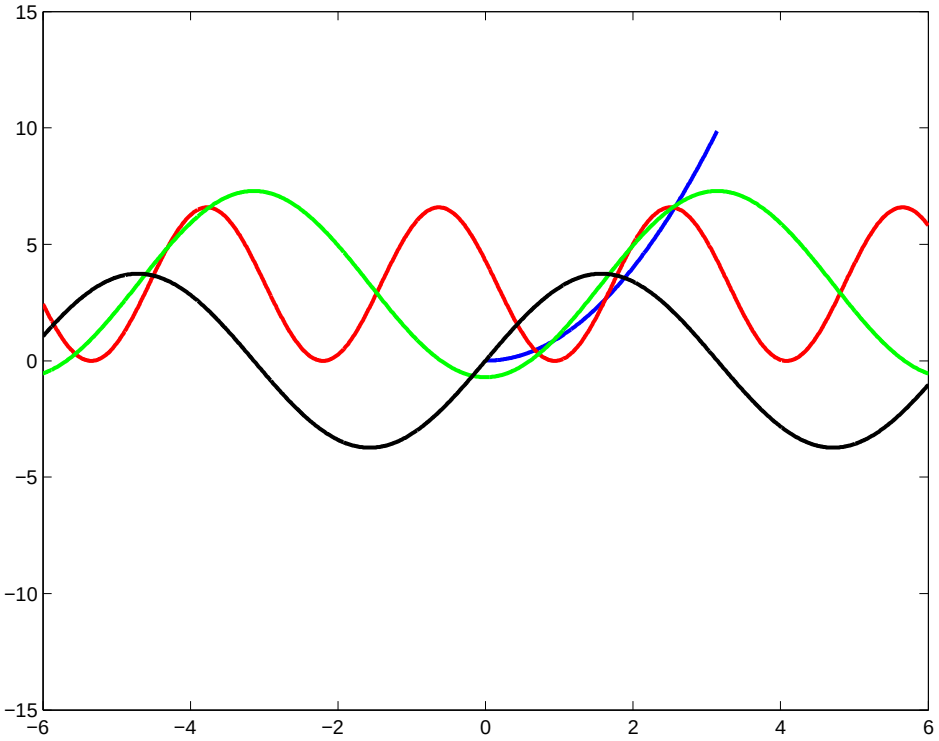
Odde utvidelse - Sinus rekken

$$S_N f(x) = \sum_{n=1}^{N} b_n \sin(nx)$$



N=1000

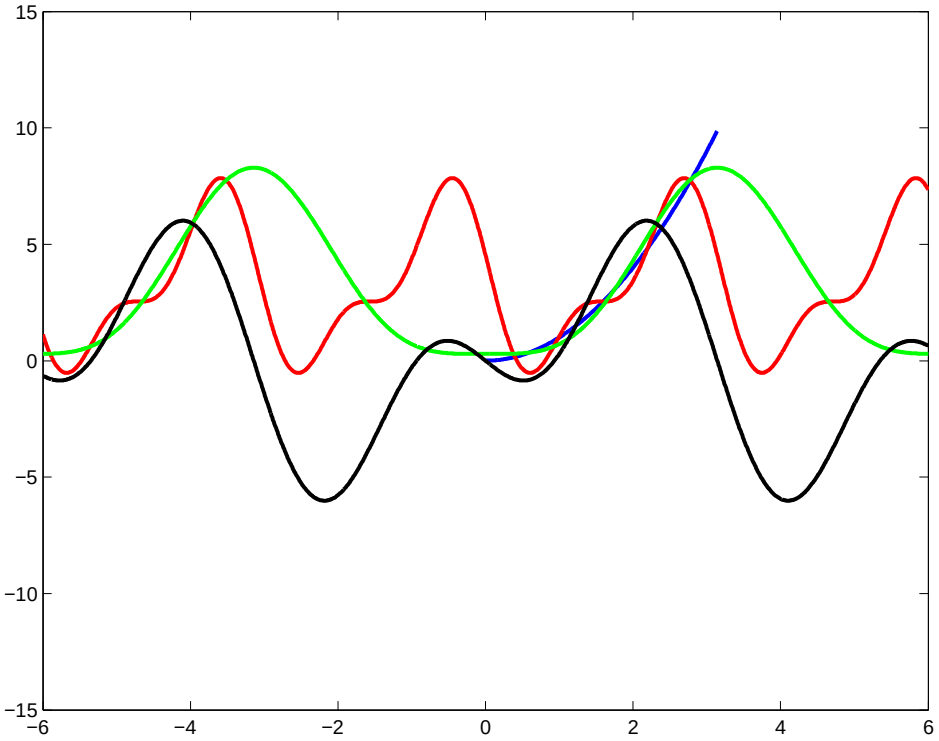
Sammeligning



π-periodisk utvidelsen
Cosinus rekken
Sinus rekken

N=1

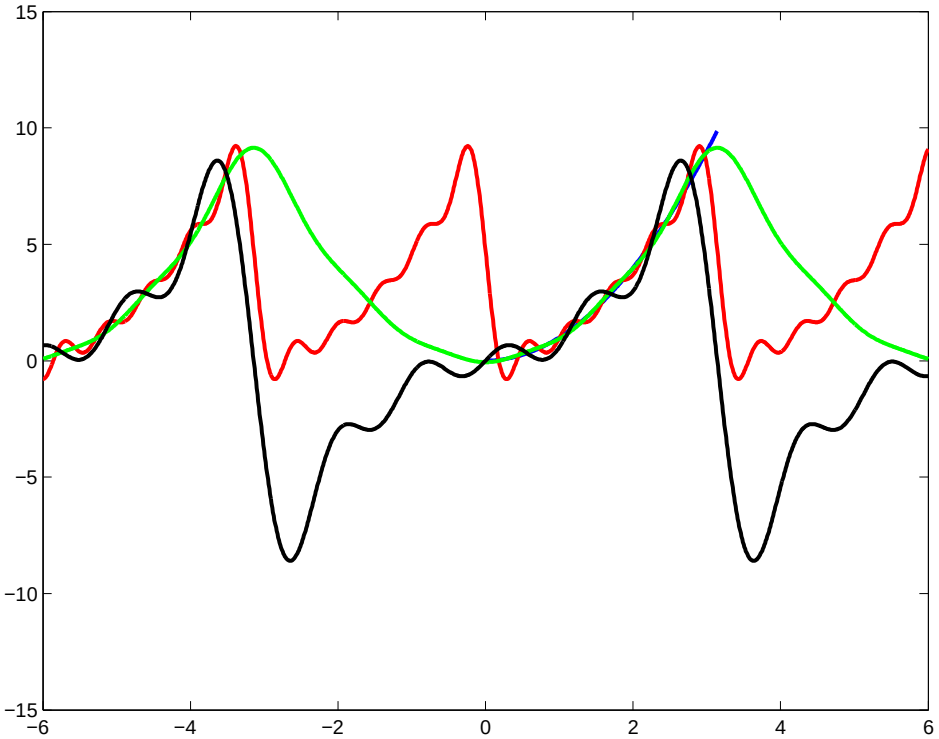
Sammeligning



π-periodisk utvidelsen
Cosinus rekken
Sinus rekken

N=2

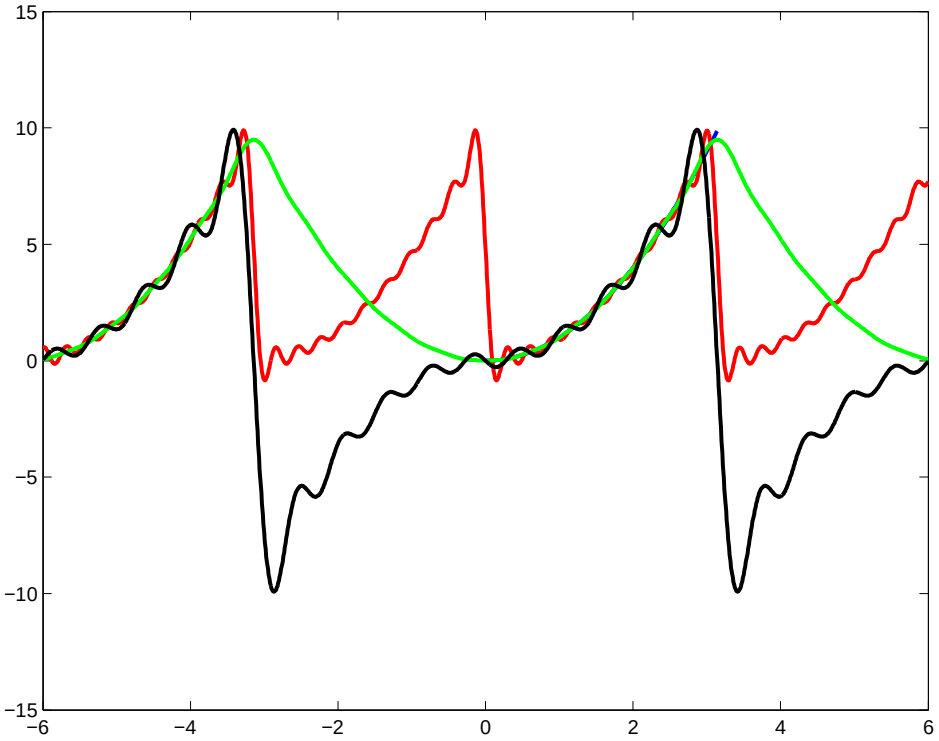
Sammeligning



π-periodisk utvidelsen
Cosinus rekken
Sinus rekken

N=5

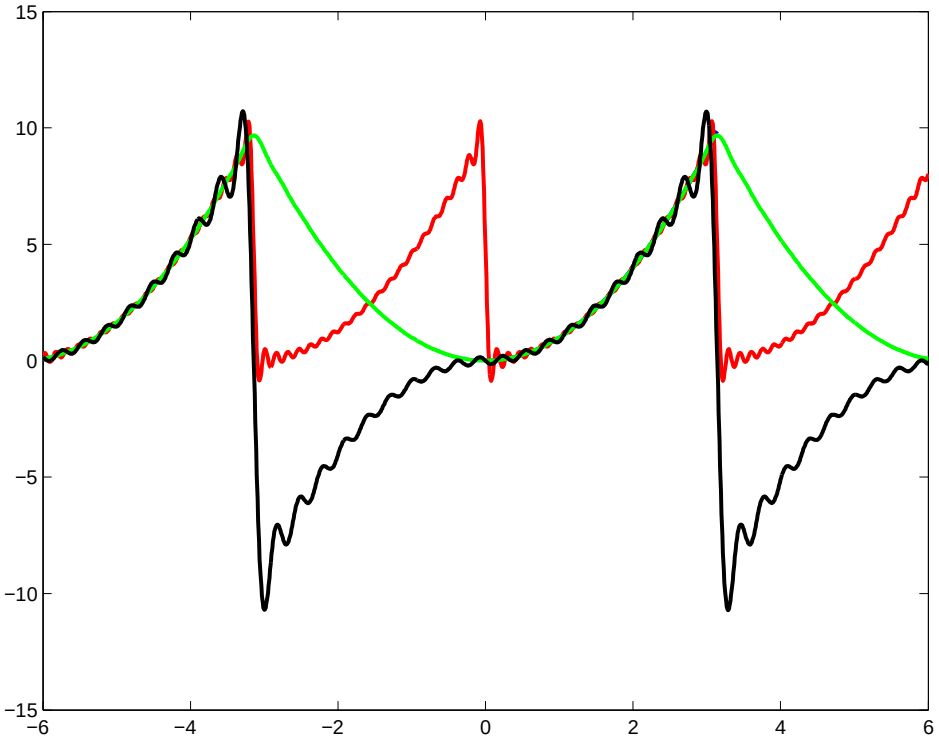
Sammeligning



π-periodisk utvidelsen
Cosinus rekken
Sinus rekken

N=10

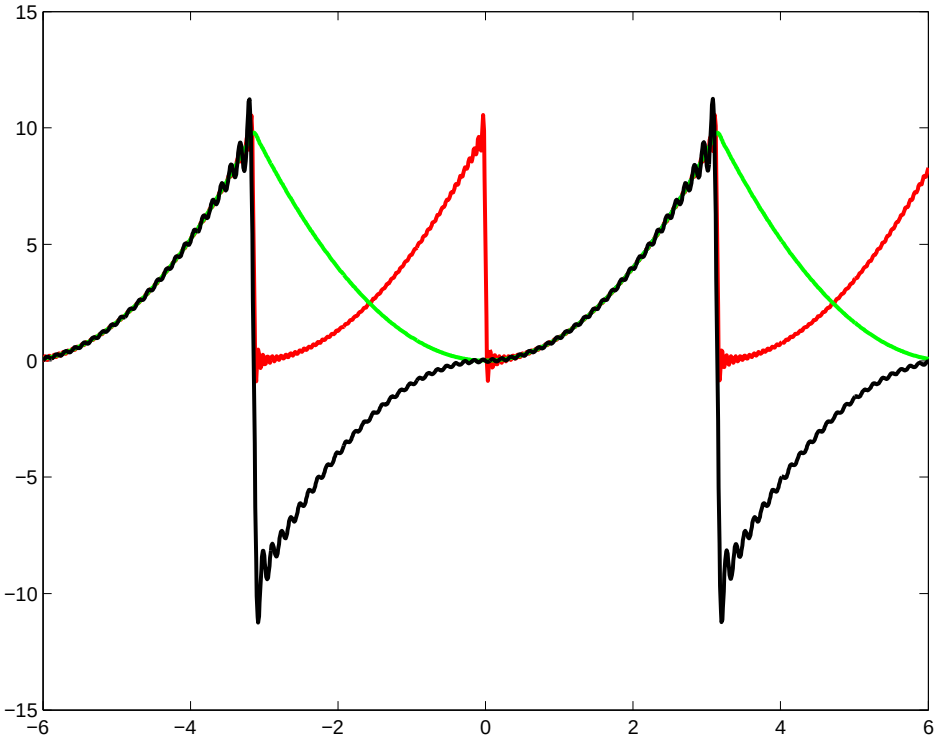
Sammeligning



π-periodisk utvidelsen
Cosinus rekken
Sinus rekken

N=20

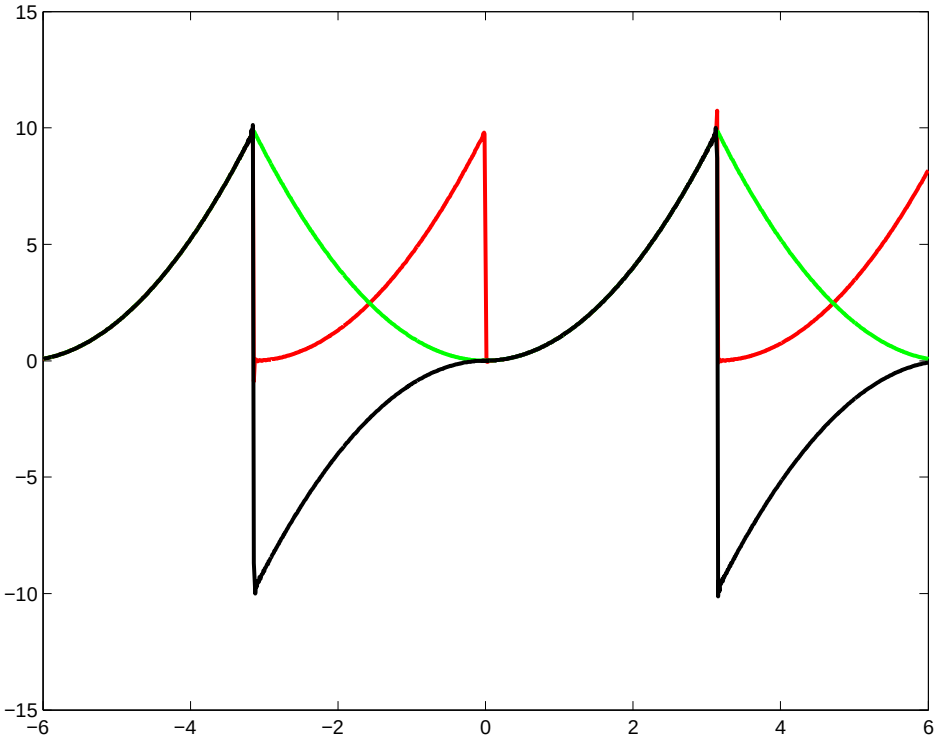
Sammeligning



π-periodisk utvidelsen
Cosinus rekken
Sinus rekken

N=50

Sammeligning



π-periodisk utvidelsen
Cosinus rekken
Sinus rekken

N=1000