

11.3.14.

$$f(x) = x, \quad -\pi < x < \pi$$

$$f(-x) = -x = -f(x), \quad f \text{ är en udda funktion.}$$

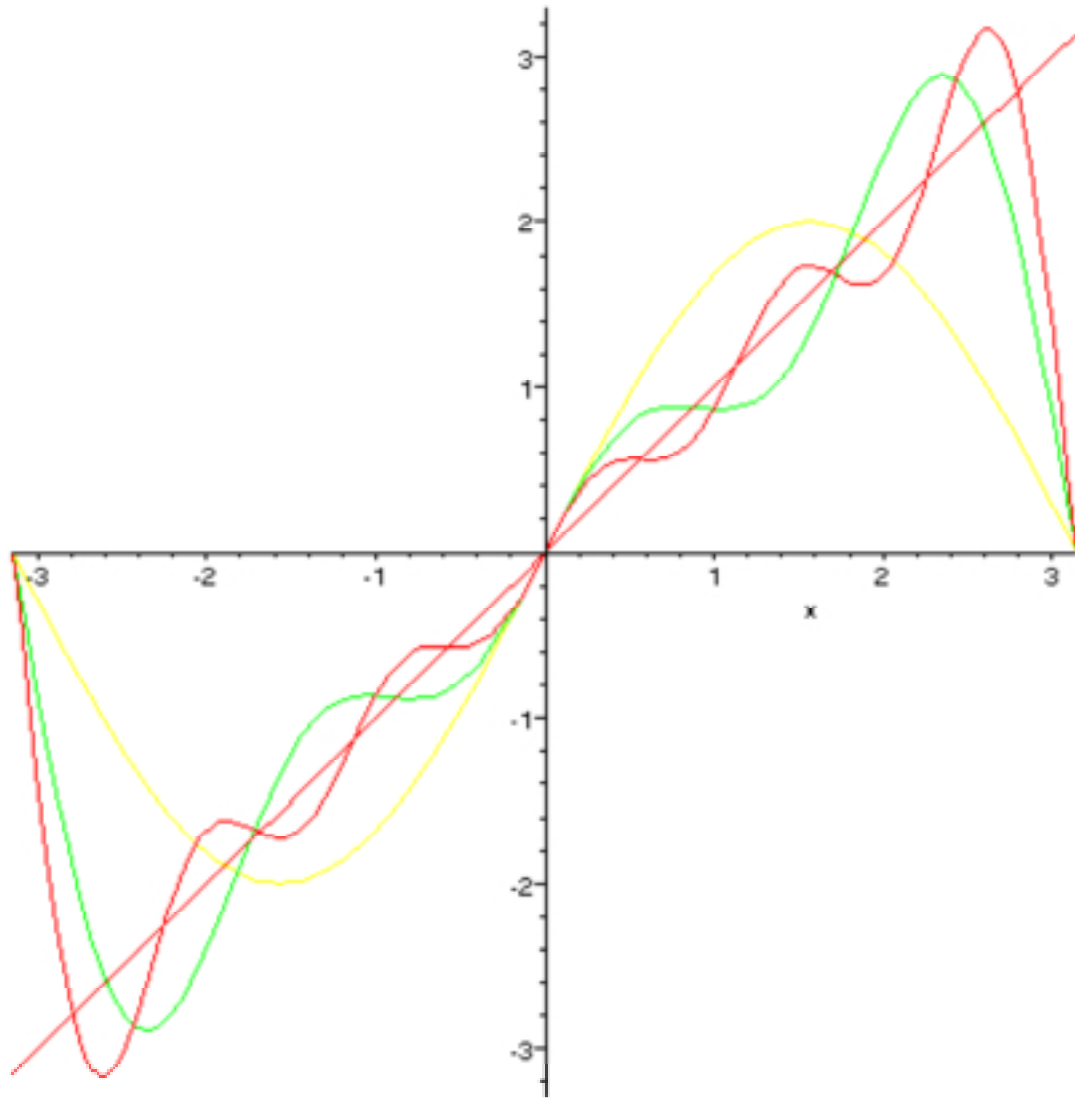
Fourierserien är på formen: 
$$\sum_{n=1}^{\infty} b_n \sin nx$$

$$b_n = \frac{2}{\pi} \int_0^{\pi} f(x) \sin nx dx = \frac{2}{\pi} \int_0^{\pi} x \sin nx dx =$$

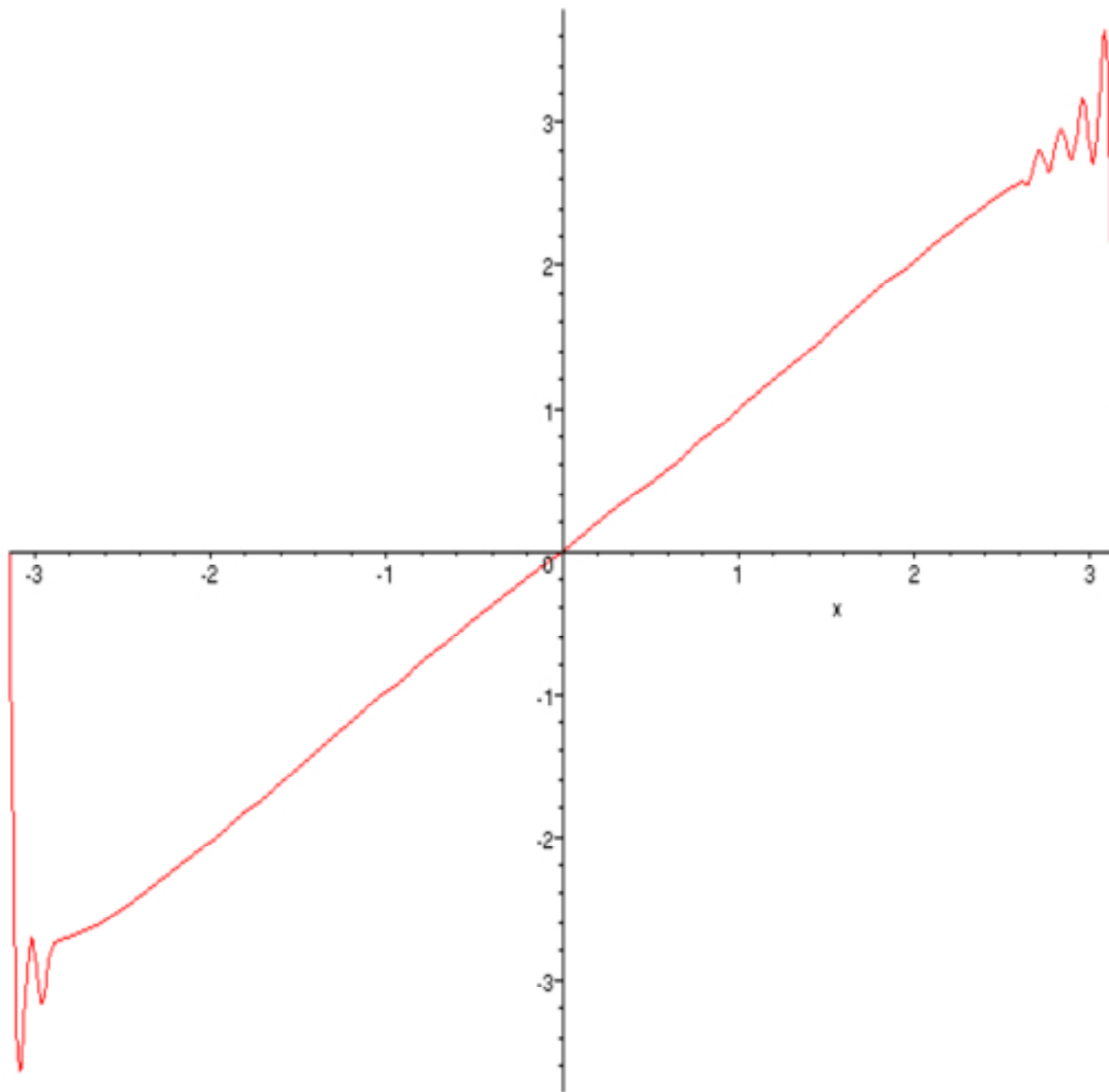
$$= [\text{partiell integration}] = \frac{2}{\pi} \left[ x \frac{-\cos nx}{n} \right]_0^{\pi} - \int_0^{\pi} 1 \frac{-\cos nx}{n} dx =$$

$$= \frac{2}{\pi} \pi \frac{-\cos n\pi}{n} = \frac{2}{n} (-1)^{n+1}$$

$$f \sim \sum_{n=1} \frac{2(-1)^{n+1}}{n} \sin nx$$



$n=1$   
 $n=3$   
 $n=5$



n=50