11.2.7.

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

$$a_0 = \frac{1}{\pi}\int_{-\pi}^{\pi}(x+\pi)dx = \frac{1}{\pi}(0 + \pi 2\pi) = 2\pi$$

$$a_n = \frac{1}{\pi}\int_{-\pi}^{\pi}(x+\pi)\cos nx dx =$$

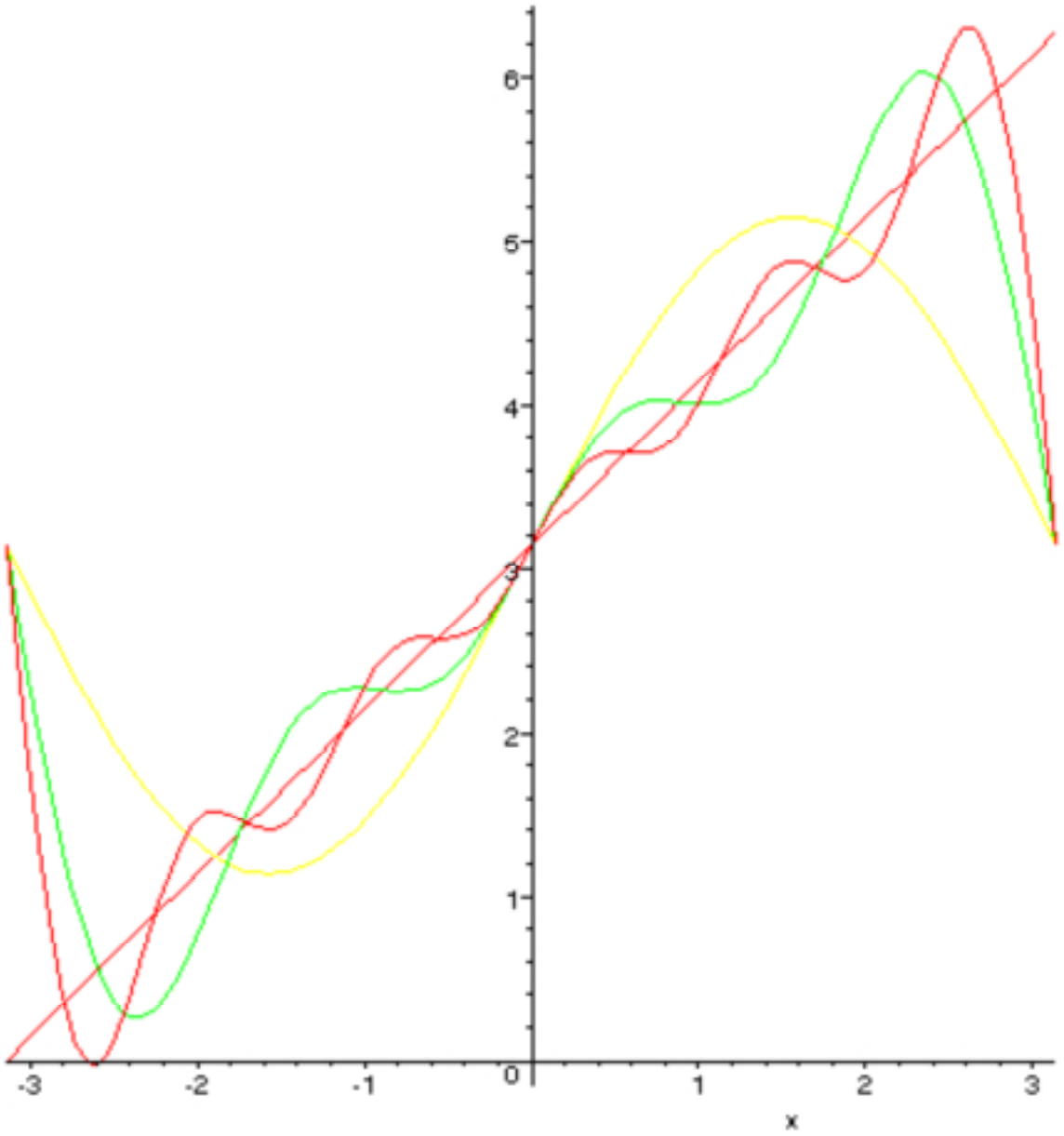
$$= \frac{1}{\pi}\left\{\left[(x+\pi)\frac{\sin nx}{n}\right]_{-\pi}^{\pi} - \int_{-\pi}^{\pi} 1\frac{\sin nx}{n}dx\right\} = 0$$

$$b_n = \frac{1}{\pi}\int_{-\pi}^{\pi}(x+\pi)\sin nx\,dx =$$

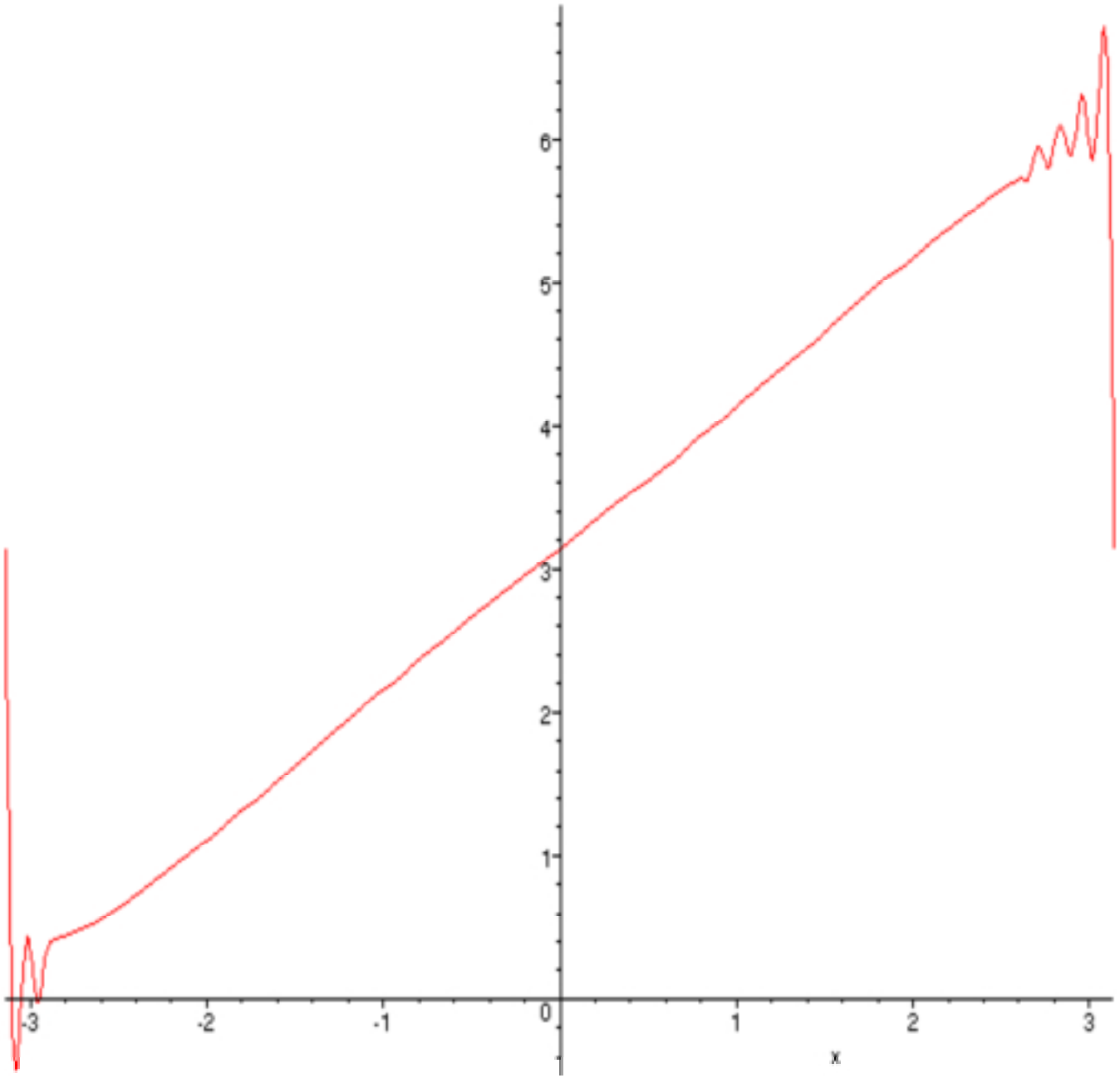
$$= \frac{1}{\pi}\left\{\left[(x+\pi)\frac{-\cos nx}{n}\right]_{-\pi}^{\pi} - \int_{-\pi}^{\pi}1\frac{-\cos nx}{n}dx\right\} =$$

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

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



n=1
n=3
n=5



n=50