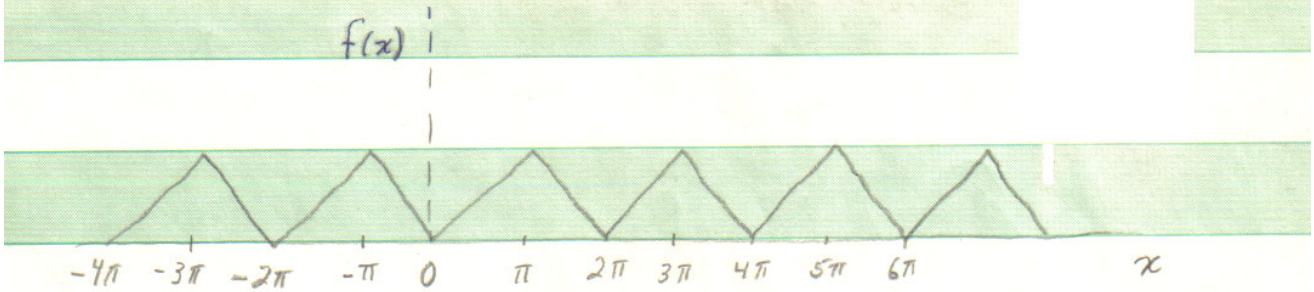
Boas 7-13.7



Use equation for a_n with $l = \pi$:

$$a_n = \frac{2}{\pi}\int_0^{\pi} x \cos nx\, dx = \frac{2}{\pi n^2}(\cos nx + nx \sin nx)\Big|_0^{\pi}$$

$$a_n = \frac{2}{\pi}\,\frac{\cos(n\pi) - 1}{n^2} = \begin{cases} -4/\pi n^2, & \text{odd } n \\ 0, & \text{even } n \end{cases}$$

$$a_0 = \frac{2}{\pi}\int_0^{\pi} x\, dx = \pi \qquad \frac{1}{2}a_0 = \frac{\pi}{2}$$

$$f(x) = \frac{\pi}{2} - \frac{4}{\pi}\sum_{\substack{\text{odd} \\ n}} \left(\frac{1}{n^2}\right)\cos nx$$