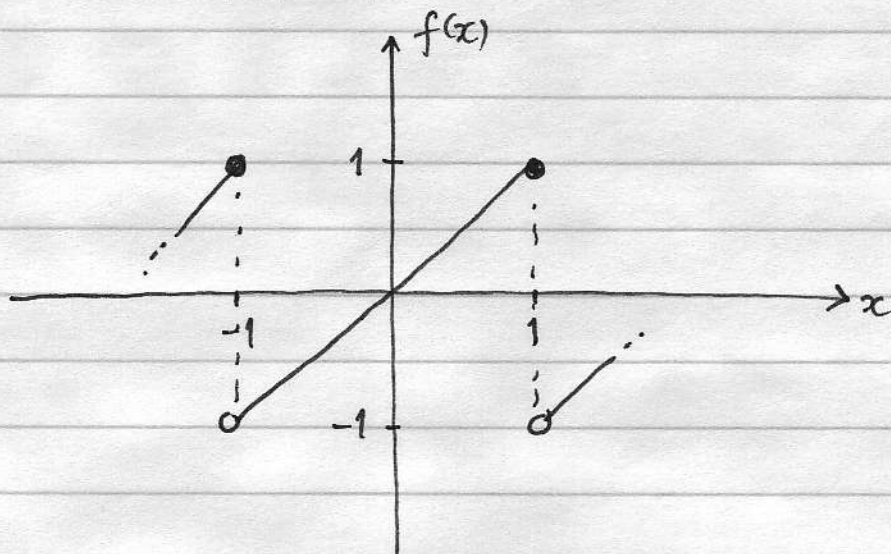


①



② $f(1^+) = -1$ $f(1^-) = +1$

p=1

③ f is odd [except at $\pm 1, \pm 2, \dots$] so $a_0 = 0$ and $a_n = 0$ for all $n \geq 1$.For $n \geq 1$,

$$b_n = \int_{-1}^1 x \sin(n\pi x) dx$$

$$= -\frac{1}{n\pi} x \cos(n\pi x) \Big|_{-1}^1 + \frac{1}{n\pi} \int_{-1}^1 \cos(n\pi x) dx$$

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

$$u = x, \quad v' = \sin(n\pi x)$$

$$u' = 1, \quad v = -\frac{1}{n\pi} \cos(n\pi x)$$

$$\Rightarrow f(x) = -\frac{2}{\pi} \sum_{n=1}^{\infty} \frac{\cos(n\pi)}{n} \sin(n\pi x),$$

$$-1 < x < 1.$$