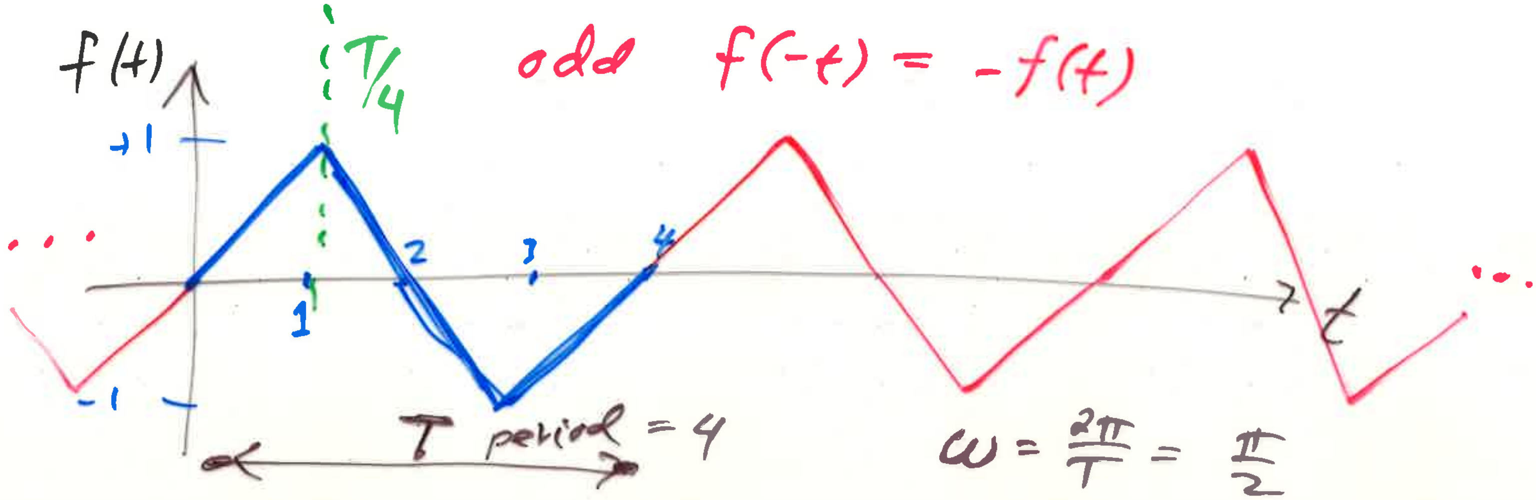

odd $f(-t) = -f(t)$

$\omega = \frac{2\pi}{T} = \frac{\pi}{2}$

$$f(t) = \begin{cases} t & , 0 \le t \le 1 \\ 2-t & , 1 \le t \le 3 \\ t-4 & , 3 \le t, 4 \end{cases}$$

$$a_0 = \langle 1 | f(t) \rangle = \frac{2}{T} \int_{t=0}^{T} 1 \, f(t) \, dt$$

$$= \frac{1}{2}\left[\int_{t=0}^{1} 1 \cdot t \, dt + \int_{t=1}^{3} 1\,(2-t)\,dt + \int_{t=3}^{4} 1 \cdot (t-4)\,dt \right]$$

$$= \frac{1}{2}\left[\frac{t^2}{2}\Big|_0^1 + \left(2t - \frac{t^2}{2}\right)\Big|_1^3 + \left(\frac{t^2}{2} - 4t\right)\Big|_3^4 \right]$$

$$= \frac{1}{2}\left[\left(\frac{1}{2} - 0\right) + \cancel{\left(\frac{3}{2} - \frac{3}{2}\right)}^{0} + \left(-8 + 7\tfrac{1}{2}\right) \right] = 0$$

$$a_n = \langle \cos(n\omega t) | f(t) \rangle = 0$$

$$b_n = \langle \sin(n\omega t) | f(t) \rangle =$$

$\propto \frac{1}{n^2}$ expect $\frac{1}{2}$ of these $= 0$