

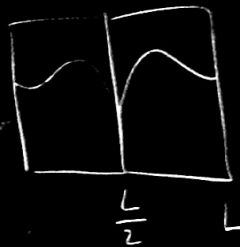
H 33-13

Even functions and zero Fourier coefficients

assume: $f(u + \frac{L}{2})$ even on $-\frac{L}{2}$ to $\frac{L}{2}$

Show: $b_{2k} = 0$ in Fourier sine series

$$\boxed{n=2k} \rightarrow b_n = \frac{2}{L} \int_0^L f(x) \sin\left(\frac{n\pi x}{L}\right) dx = \frac{2}{L} \int_{-\frac{L}{2}}^{\frac{L}{2}} f(u + \frac{L}{2}) \sin\left(\frac{n\pi u}{L} + \frac{n\pi L/2}{L}\right) dx$$



Let $x = u + \frac{L}{2}$

$dx = du$

x	u
0	$-\frac{L}{2}$
L	$\frac{L}{2}$