

Solutions

2.1 B Even times sine is odd, so each symmetric sine-coefficient integral is zero.

Compare the rejected options: All $a_n=0$; Zero mean; Only its fundamental; Equal a_n and b_n . Use the stated model and conditions.

2.2 C $a_n=2[(-1)^{n-1}]/(\pi n^2)$; even n gives zero.

Compare the rejected options: $-4/\pi$; $-1/\pi$; $\pi/2$; 2. Use the stated model and conditions.

2.3 3. The constant term is $a_0/2$.

2.4 True. The angle-addition identities mix coefficients at the same frequency.

3.1 Substitute the shift in $f \approx \pi/2 - (4/\pi) \cos x$: $g \approx \pi/2 - (4/\pi) \sin x$. Its mean remains $\pi/2$. Evenness depends on the chosen origin; g is not even about zero. Frequencies stay unchanged. Award substitution, harmonic/sign, mean and origin/frequency interpretation.