

Consider a discrete-time signal with period $N = 5$. Let the discrete-time Fourier series (DTFS) representation be $x[n] = \sum_{k=0}^4 a_k e^{jk\frac{2\pi n}{5}}$ where $a_0 = 1$, $a_1 = 3j$, $a_2 = 2j$, $a_3 = -2j$, $a_4 = -3j$. The value of the sum $\sum_{n=0}^4 x[n] \sin\left(\frac{4\pi n}{5}\right)$ is