For the continuous-time periodic signal

\[ x(t) = 2 + \cos\left(\frac{2\pi}{3} t\right) + 4 \sin\left(\frac{5\pi}{3} t\right). \]

determine the fundamental frequency \( \omega_0 \) and the Fourier series coefficients \( a_k \) such that

\[ x(t) = \sum_{k=-\infty}^{\infty} a_k e^{j\omega_0 t}. \]

Our notation is

\[ \sum_{k=-\infty}^{\infty} X[k] e^{j k \omega_F t}, \]

where \( \omega_F = 2\pi f_F \).

**Hint**

We didn't talk about this in class, but any constant term, like 2, is the "DC term" with the zero-th harmonic, i.e. \( X[0] \).
A continuous-time signal $x(t)$ is real valued and has a fundamental period $T_0 = 8$. Only a few values of $X[k]$ are non-zero; these are

$$X[1] = X[-1] = 2$$
$$X[3] = X^*[\overline{3}] = 4j$$

Express $x(t)$ in the form

$$x(t) = \sum_{k=0}^{\infty} A_k \cos(\omega_k t + \phi_k)$$