Problem 5  (10 points)

Figure 5.1 is a plot of 5 continuous-time periodic signals, \( x_1(t) \) through \( x_5(t) \). Two periods of each signal are shown. Each of these signals has a Fourier series representation. For which signals will the Fourier series coefficient \( a_0 \) be equal to 2? Justify your answer.

Figure 5.1: Signals \( x_1(t) \) through \( x_5(t) \) for Problem 5.

Signals for which \( a_0 = 2 \):

Justification: (use extra space on page 7 if you need more room)
IN-CLASS PROBLEM 2

\[ \begin{align*}
\ldots & \quad \ldots \\
1 & \quad 0 & \quad 2 & \quad \rightarrow & \quad H(j\omega) & \quad \rightarrow & \quad y(t) = ? \\
\ldots & \quad \ldots \\
\end{align*} \]

\[ H(j\omega) \]

\[ \begin{align*}
& \quad 1 \\
-\pi & \quad 0 & \quad \pi \\
\end{align*} \]

WHAT IS $y(t)$?