Consider the continuous-time signal \( x(t) \) where
\[
\forall t \in \mathbb{Reals}, \quad x(t) = 1 + \cos(\pi t) + \cos(2\pi t).
\]
Suppose that \( x \) is the input to an LTI system with frequency response given by
\[
\forall \omega \in \mathbb{Reals}, \quad H(\omega) = \begin{cases} 
  e^{i\omega} & \text{if } |\omega| < 4 \text{ radians/second} \\
  0 & \text{otherwise}
\end{cases}
\]
Find the output \( y \) of the system.