Applied Algebra, Homework 3

1. Express $\sin 2\pi t + \cos 2\pi t - \sin 6\pi t$ as a sum of complex exponential functions of the form $ce^{2\pi ikt}$.
2. Suppose that $f(t)$ is a periodic function with a period of 1, which, on the interval $[0, 1)$ is given by the equation $f(t) = t$. Suppose that we are able to write $f(t) = \sum_{n \in \mathbb{Z}} c_n e^{2\pi int}$. Find the complex numbers c_0 and c_1.