

Homework No. 5
Due 15:00 , April 30, 2008

- (1) Use the definition of the Fourier series to determine the time-domain signals represented by the following Fourier series coefficients:

$$X[k]=(-1/3)^{|k|}, \omega_0=\pi$$

- (2) $x(t)=2t^2, -2 < t < 2, x(t+4)=x(t)$

Find the complex exponential Fourier Series of $x(t)$.

- (3) What is the Fourier Transform of $e^{-|t|}\cos(5t)$?

- (4) Use the defining equation for the Fourier series coefficients to evaluate the Fourier series representation of the following signals:

(a) $x(t)=\sin(3\pi t)+\cos(4\pi t)$

(b) $x(t)=\sum_{m=-\infty}^{\infty} \delta\left(t - \frac{m}{3}\right) + \delta\left(t - \frac{2m}{3}\right)$