City UNIVERSITY OF Hong Kong
Department of Electronic Engineering

EE 3210   Signals and Systems

Homework #9

1. Find the Z-transform of the following signals:
   (i) $[(1/2)^n + (1/4)^n]u(n)$.
   (ii) $(1/2)^n[u(n) - u(n-10)]$.
   (iii) $e^{-an}\cos\Omega nu(n)$, $a > 0$.
   (iv) $7(1/2)^n\cos[(2\pi n/6) + (\pi/4)]u(n)$.

2. Determine the initial and final values of $x(k)$, and also find the inverse Z-transform of the following $X(z)$:
   (i) $(1 + 2z + 3z^2 + 4z^3 + 5z^4)/z^4$.
   (ii) $z^{-1}(0.5 - z^{-1})/(1 - 0.5z^{-1})(1 - 0.8z^{-1})^2$.
   (iii) $z^{-1}/(1 - z^{-1})(1 + 1.3z^{-1} + 0.4z^{-2})$.

3. Problem 10.18, pp. 800.

4. Problem 10.20, pp. 801.

5. Problem 10.36, pp. 805.