8.2-4 (a) periodic because \( \frac{2\pi}{a} = \frac{10}{3} \) rational, using 
Eq. (8.9b), we find that \( a = \frac{15}{5} \) is an integer for 
the smallest \( m = 3 \). Hence \( N_0 = 10 \)

(b) periodic because \( \frac{2\pi}{a} = \frac{5}{2} \), rational, and \( N_0 = 5 \)

(c) all the three sinusoid signals are periodic with 
periods \( 10, 4 \) and \( 5 \), because 
\( 2 \times 10 = 5 \times 4 = 4 \times 5 = 20 \), the period is 20, 
this is because we can fit exactly 2, 5, and 4 cycles of 
the three signals in a period 20.

8.2-9 (c) \( v_f = 2 \times 3^2 + 2 \times 6^2 + 2 \times 9^2 = 252 \)

8.2-11 \( u_f = \frac{1}{6} [3^2 + 2 \times 2^2 + 2 \times 1^2] = \frac{19}{6} \)

8.3-2 For \( \cos (11\pi t + \frac{\pi}{6}) \), the samples sinusoid, replace \( t \) 
with \( kT = 0.1 K \), is 
\[
\cos (\frac{11}{10} K \pi t + \frac{\pi}{6}) = \cos \left( (2\pi - \frac{9\pi}{10}) K \pi t + \frac{\pi}{6} \right) \\
= \cos \left( -\frac{9\pi}{10} K \pi t + \frac{\pi}{6} \right) \\
= \cos \left( \frac{7\pi}{10} K \pi t - \frac{\pi}{6} \right)
\]

For \( \cos (7\pi t - \frac{\pi}{6}) \), we get 
\[
\cos \left( \frac{2\pi}{10} K \pi t - \frac{\pi}{6} \right) = \cos \left( (2\pi \pi t + \frac{\pi}{10} K \pi t - \frac{\pi}{6} \right) \\
= \cos \left( \frac{3\pi}{10} K \pi t - \frac{\pi}{6} \right)
\]
9.4-1 \quad Y(k) = e^{-k} u(k) \times (-2)^k u(k)
\quad = \left(\frac{1}{e}\right)^k u(k) \times (-2)^k u(k)
\quad = \frac{1 - \left(\frac{1}{2}\right)^{k+1} - (-2)^{k+1}}{1 + 2}
\quad = \frac{1}{1 + 2} \int e^{-(1+2)u}(-2)^{k+1} u(k)

11-1(a) \quad F(z) = \frac{\infty}{K} (\frac{1}{z})^{K-1} = \frac{\infty}{K} \left(\frac{1}{z}\right)^{K} = \frac{1}{K} \frac{1}{1 - \frac{1}{z^{K}}} = \frac{1}{z^{K}}