.一、1.42 答案如下所示。请注意：答题格式；第（c）题注意周期为 3 而不是 2.

1.42 (a) Periodic:
Fundamental period = 0.5s

(b) Nonperiodic

(c) Periodic
Fundamental period = 3s

(d) Periodic
Fundamental period = 2 samples

(e) Periodic
Fundamental period = 2 samples

(f) Periodic:
Fundamental period = 10 samples

(g) Nonperiodic

(h) Nonperiodic

(i) Periodic:
Fundamental period = 1 sample

二、1.44 答案如下所示。

1.44 The RMS value of sinusoidal $x(t)$ is $A/\sqrt{2}$. Hence, the average power of $x(t)$ in a 1-ohm resistor is $(A/\sqrt{2})^2 = A^2/2$.

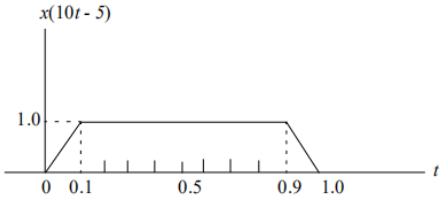
三、1.46 答案如下所示。请注意：计算需谨慎且正确

1.46 The energy of the raised cosine pulse is

$$\begin{aligned} E &= \int_{-\pi/\omega}^{\pi/\omega} \frac{1}{4}(\cos(\omega t)+1)^2 dt \\ &= \frac{1}{2}\int_{0}^{\pi/\omega} (\cos^2(\omega t) + 2\cos(\omega t) + 1) dt \\ &= \frac{1}{2}\int_{0}^{\pi/\omega} \left(\frac{1}{2}\cos(2\omega t) + \frac{1}{2} + 2\cos(\omega t) + 1\right) dt \\ &= \frac{1}{2}\left(\frac{3}{2}\right)\left(\frac{\pi}{\omega}\right) = 3\pi/4\omega \end{aligned}$$

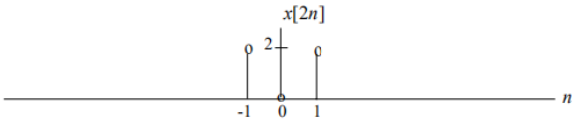
四、1.51 答案如下所示。请注意：缩放问题，可先化简为 x(10(t-1/2))逐步分析

1.51

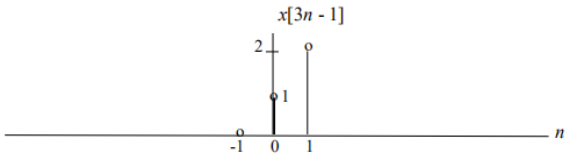


五、1.56 答案如下所示。请注意：缩放后出现的非整数采样点将舍去；n=0 处的采样值请不要省略不画出来；请用竖线加小圆圈表示采样点的值，而非仅一条竖线。

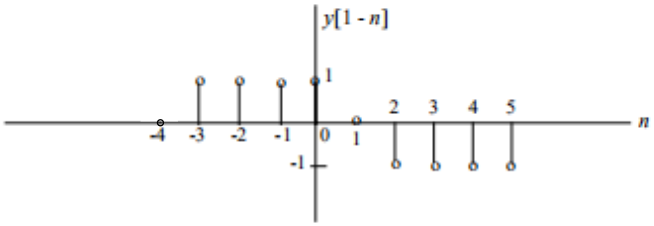
1.56 (a)



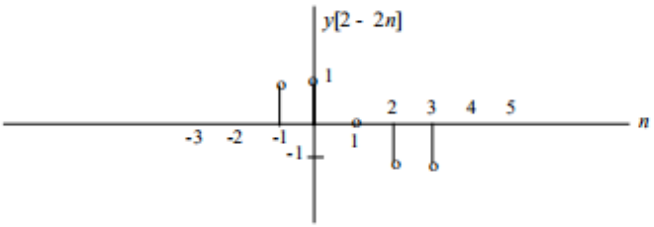
(b)



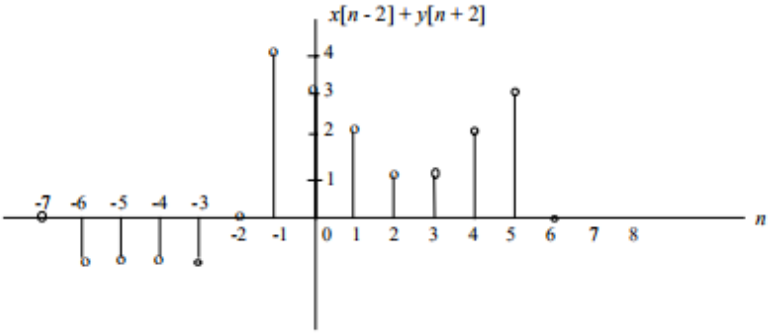
1.56 (c)



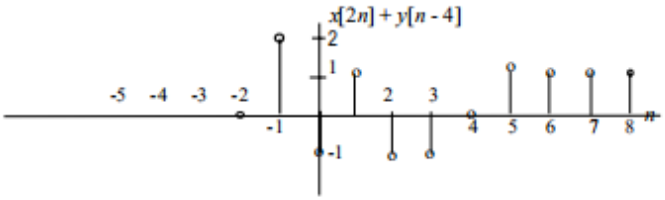
(d)



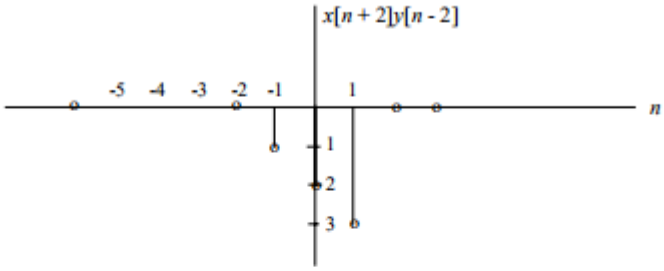
(e)



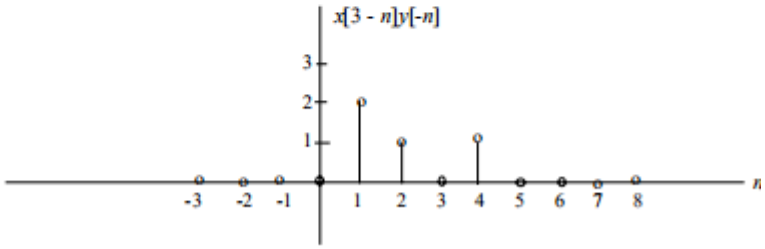
(f)



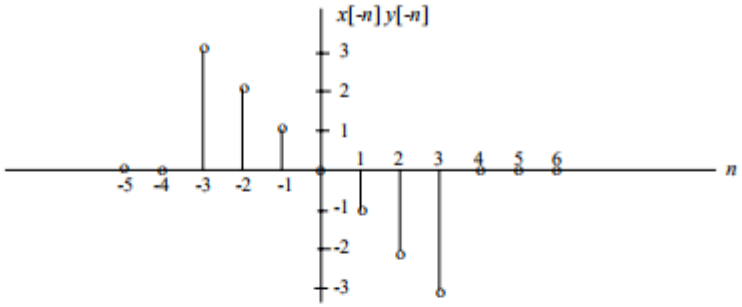
1.56 (g)



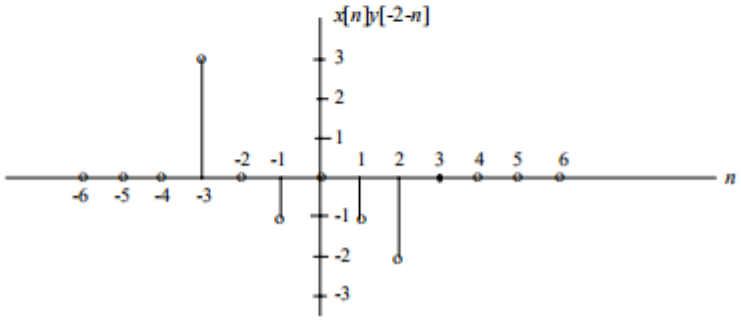
(h)



(i)



(j)



1.56 (k)