$$\mu_X(n) = E[X(n)] = E[2Z(n)-1] = 2\underbrace{E[Z(n)]}_{=0,7} - 1 = 0,4$$

$$\sigma_X^2(n) = Var(2Z(n)-1) = 4\,var(Z(n)) = 4 \times 0,7 \times 0,3 = 0,84$$

$$\mu_X(t) = E[At+B] = t\,E[A] + E[B] = \frac{1}{2}t + \frac{1}{2}$$

$$\sigma_X^2(t) = Var(At+B) = t^2\,Var(A) + var(B) = t^2\,\frac{(2-0)^2}{12} + \frac{(2-0)^2}{12} = \frac{1}{3}t^2 + \frac{1}{3}$$

$Y(n) = Y(n-1) + X(n)$, $X(n)$ random step de parámetro p.

$$\mu_Y(n) = E[Y(n)] = E\left[\sum_{j=1}^{n} X(j)\right] = \sum_{j=1}^{n} E[X(j)] = n\,\mu_X(j) = n(2p-1)$$

$$\sigma_Y^2(n) = var\left(\sum_{j=1}^{n} X(j)\right) \underset{iid}{=} \sum_{j=1}^{n} var(X(j)) = n\,(4p(1-p))$$

No es ESA pues $\mu_Y(n)$ y $\sigma_Y^2(n)$ varían con n.

$A = N(1; 0,16)$ $\omega_0 = 0,015\pi$

$X(n) = A\cos(\omega_0 n)$

$$\mu_X(n) = E[X(n)] = E[A\cos(\omega_0 n)] = \overbrace{E[A]}^{1}\cos(\omega_0 n) = \cos(0,015\pi n)$$

No es ESA pues $E[X(n)]$ depende de n.

$$\sigma_X^2(n) = var(X(n)) = var(A\cos(\omega_0 n)) = \cos^2(\omega_0 n)\,var(A) = 0,16\cos^2(\omega_0 n).$$

$A = 1$, $\Theta \sim U(0, 2\pi)$ $\omega_0 = 0,015\pi$.

$X(n) = A\cos(\omega_0 n + \Theta)$

$$\mu_X(n) = E[X(n)] = E[A\cos(\omega_0 n + \Theta)] = A\,E[\cos(\omega_0 n + \Theta)]$$

$$= A\int_0^{2\pi} \cos(\omega_0 n + t)\,\frac{1}{2\pi}\,dt = \frac{A}{2\pi}\,\mathrm{sen}(\omega_0 n + t)\Big|_0^{2\pi} = 0$$

$$\boxed{\mu_X(n) = 0}$$

$$\sigma_X^2(n) = var(X(n)) = var(A\cos(\omega_0 n + \Theta)) = A^2\,var(\cos(\omega_0 n + \Theta))$$

$$= A^2\,E[\cos^2(\omega_0 n + \Theta)] = A^2\int_0^{2\pi} \cos^2(\omega_0 n + t)\,\frac{1}{2\pi}\,dt = \frac{A^2}{2\pi}\left(\frac{2\omega_0 n + t}{2} + \cancel{\frac{\sin(2\omega_0 n + t)}{4}}\right)\Bigg|_0^{2\pi}$$

$$\boxed{\sigma_X^2(n) = \frac{A^2}{2}}$$

Es ESA.