	1. Yt's uncorrelated E(It) = u Var(It) = 52
	$Q. Mt = \left(\frac{\sum_{j=1}^{N} (t+1-j)}{N}\right)$
alata mendalah daran menerina dan mendalah mendalah Samurah bada dan sebagai dan sebagai dan sebagai dan sebag	
	Var (Yer (Yer - j) = N - Var (Yer - j) = N - N 0 = 1/2
	b. Cov(Mt, Mttk)
	D. Cov(Mt, Mttk) = Cov(\lambda\frac{1}{2}\lambda\frac\frac{1}{2}\lambda\frac{1}{2}\lambda\frac{1}{2}\lambda\frac{1}{2}\lambda\frac{1}{2}\lambda\frac{1}{2}\lambda\frac{1}{2}\lambda\frac{1}{2}\lambda\frac{1}{2}\lambda\frac{1}{2}\lambda\frac{1}{2}\l
	= \(\frac{1}{N^2}\)\(\left(\overline{\sum_{N-k-1}}{\sum_{N-k-1}}\)\(\frac{1}{\sum_{N-k-1}}{\sum_{N-k-1}}{\sum_{N-k-1}}\)\(\frac{1}{\sum_{N-k-1}}{\sum_{N-k-1}}\)\(\frac{1}{\sum_{N-k-1}}{\sum_{N-k-1}}{\sum_{N-k-1}}{\sum_{N-k-1}}\)\(\frac{1}{\sum_{N-k-1}}{\su
	M 2
	$\frac{\sum_{j=1}^{n} y_{t+1-j}}{\sum_{j=1-k}^{n} y_{t+1-j}} \text{are indep.}$
	$=\frac{1}{N^2} Var\left(\frac{\sum_{j=1}^{N+1} k_{j+1}}{\sum_{j=1}^{N+1} k_{j}}\right) = \frac{1}{N^2} \frac{\sum_{j=1}^{N+1} k_j^2}{\sum_{j=1}^{N+1} k_{j}^2} = \sigma^2 \frac{N^2}{N^2}$
	C. ACF. Assume K>0 When K <n< th=""></n<>
novice Principal (Annie Principal III de la Calenda de La Calenda de Calenda de Calenda de Calenda de Calenda d	C. ACF. Assume K > 0 When K < N. (K = Cov(Mt, Mt+k) (Var(Mt) · Var(Mt+k)
	Var (Mt) · Var (Mt/K)
	= JN-K N-E N-K N-K
	1 0% · 0%
	Symmetric for K=0 SO PK = 1- 1K/ K <n< th=""></n<>

```
a. E((t) = E( &, cos(wt) + & sin(wt) + et)
                    = E(81) (os(wt) + E(2) sin(ut) + E(et) = 0.
           Var(Yt) = Var(Z1(0S(wt) + Zz sin(wt) + et)
                    = cos (wt) + Sin (wt) + 02 = 1+02
       COV(K, K+K) = E(K) F+K) - E(K) E(K+K)
                      = E(Yt Yt+K) = E((Yt-Ct)(Y+K-C++K))
                     = E (Zicos(wt) + Z, sin(wt)) (Zicos(wt+k)) + Z, sin(w(t+k)))
                     = E[Zi cos(wt)cos(w(t+k)) + Zisin(wt)sin(w(t+k))]
                    + E( ZiZz (OSWt) sin(w(HK)))
                       E(8, 3, Sin(wt) cos(w(t+k)))
                    = COS(Wt) COS (W(++K)) EZi+ Sin(wt) Sin(wttk)) EZi
      EZi=EZi=1) = (05(wt) (05(wt+k)) + Sin(wt) sin (w(+k))
                     = cos(u(t+k)-wt) = cos(wk)
      ACF: PK = COS(WK)

1+ 62 | Not depend on t => Stationary
    b. See R code
    C. E(X_t) = \beta_0 + \beta_1 t not constant over t
         So IXt's is not stationary. Soe R code for simulation
        \nabla X_t = \beta_1 + Z_1 \left[\cos(\omega t) - \cos(\omega t - \omega)\right] + Z_2 \left[\sin(\omega t) - \sin(\omega t - \omega)\right]
E(\nabla X_t) = \beta, \quad (orstant over t.)
|e^t S = t + K \quad (oV(\nabla X_t, \nabla X_s)) = F[(X, [\cos(wt) - \cos(wt - w)] + Z_1[\sin(wt - \sin(wt - w))]
                                 · (Z, [losws+cos(ws-w)] + Z2[sin(ws)-sin(ws-w)]
 Inside expectation = Zi [coswt-coswt-w][(vs(ws)-cos(ws-w)]
                   + Zi [sihwt-Sin(wt-w)][Sin(ws)-sih(ws-w)]
                   + 2.82  expedation = 0
```

	So (ov (PX+, PXs) = [coswt-cos(wt-w)][cosws-cos(ws-w)]
	+ [Sinwt-Sin(wt-w)][Sinws-Sin(ws-w)]
	= (os(wt)cos(ws) + sin(wt)sin(ws)
	+ cos (wt-w) ros(ws-w) + sin (wt-w) sin (ws-w)
	- (os (wt) (os (ws-w) + sin (wt) sin (ws-w))
	- [cos(ws) cos (wt-w) + sin (ws) sin (wt-w)]
	= (os(w(s-t)) + cos(w(s-t))
	$-\cos(w(S-t+1))-\cos(w(s-t-1))$
	S-t=k = 2(os(wk) - (os(w(k+1)) - (os(w(k-1)))
	Knot depend on t.
	⇒ Stationary
La Participa de la Constantina del Constantina de la Constantina del Constantina de la Constantina de	See R-code for simulation.
Automorphism and the second se	
PL vertical and the second sec	3. See R Code.
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Tenders and the second	
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