2). $\{X_t\}$. stochastic process with mean function $6t$ and autocovariance $(0.1)^k$.

(a). Is $\{X_t\}$ stationary?

No, $\mu_t = 6t$, depends on t.

(b). $Y_t = X_t - 4t$. $\{Y_t\}$ stationary?

No. $E(Y_t) = E(X_t - 4t) = E(X_t) - E(4t) = 6t - 4t = 2t$

depends on t.

(c). $W_t = Y_t - 2t$, $\{W_t\}$ stationary?

ignore constant

1. $E(X_t - 6t) = 0$ ✓.
2. $Cov(W_t, W_{t+k}) = Cov(X_t - 6t, X_{t+k} - 6t + 6k)$

$= Cov(X_t, X_{t+k}) = (0.1)^k$ ✓.

$\Rightarrow$ Yes!