1. Define intrinsic stationarity.

2. Define weak stationarity.

3. The standard Brownian motion is a diffusion process \( s(t) \), \( t \geq 0 \) satisfying the following:

   - \( s(0) = 0 \).
   - \( s(t) \) has independent increments.
   - For \( t_1 > t_2 \), \( s(t_1) - s(t_2) \sim \mathcal{N}(0, \sigma^2(t_1 - t_2)) \).

   Show that
   
   (a) a standard Brownian motion is intrinsically stationary,
   
   (b) a standard Brownian motion is not weakly stationary.

4. The Ornstein-Uhlenbeck process \( V(t) \) is defined using the standard Brownian process \( X(t) \):

   \[
   V(t) = e^{-t} s(e^{2t})
   \]

   (a) Show that Ornstein-Uhlenbeck process \( V(t) \) is weakly stationary.
   
   (b) Is \( V(t) \) intrinsically stationary? Explain.

5. What are the assumptions of stationarity made about a stochastic process when using the different kriging methods?