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1 message

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Please find your Answer below (or) in the attached Image / Document!

Expert Answer

sunieel answered this

$$X(t) = Acos(\omega t + \Theta)$$

a)mean:- $$mX(t) = E[Acos(\omega t + \Theta)] = \frac{1}{2\pi}\int_0^{2\pi} Acos(\omega t + \Theta)$$

=0 ----------answer

b)autocorrelation function of X(t)=$$RX(t1, t2) = A^2 E(cos(\omega t1 + \Theta)cos(\omega t2 + \Theta))$$

$$= \frac{A^2}{2\pi}\int_0^{2\pi} \frac{cos(\omega(t1 - t2) + cos(\omega(t1 + t2) + \Theta))}{2} d\Theta$$

$$= \frac{A^2}{2} cos(\omega(t1 - t2))$$

c)WSS process

X(t) is a wide sense stationary process if

mean =m for all t

and,covariance Cx(t1,t2)=Cx(t1-t2)

thus it can be seen from the above deriavtion both the condition are satisfied therefore it WSS process

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