Problems to study for RPs sorted by learning objectives (aka tasks)

Fall 2021

Task 1: (from Topics 4.1 and 4.2)

Given a word problem of a RP, find key characteristics like PDF, mean, variance, autocorrelation

Sample problems

HW 11 #4

HW 11 #5

Ch 5 - problems #42

Ch 5 - problems #47

Final Fall 2019 #6

Final Spring 2018 #12

world problem

discrete time "derived" RP

Task 2: (from Topic 4.3)

Given a RP and its mean, and autocorrelation and/or autocovariance, identify whether RP is WSS or not

Sample problems

Ch 5 - problems #47

Final Fall 2019 #2

Final Spring 2018 #12

Task 3: (from Topic 4.3)

Given a WSS RP, with $R_X(\tau)$ given, find second order moments of samples of $X(t)$ at different times

Sample problems

Ch5-problems	#45	
Ch5-problems	#46	(includes interpreting $R_X(\tau)$)
Final Fall 2019	#7	

Task 4: (from Topic 4.4)

Given a WSS RP input $X(t)$ and an LTI system w/ $H(f)$ find mean and autocorrelation of $Y(t)$

Sample problems

Ch5-problems	#43
Final Fall 2019	#1(b)
Final Spring 2018	#1