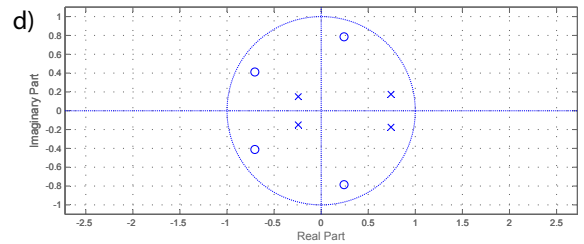
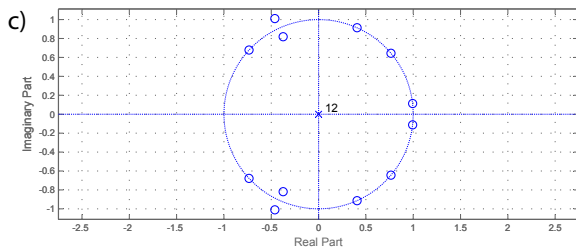
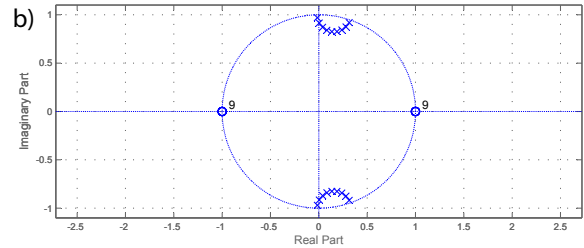
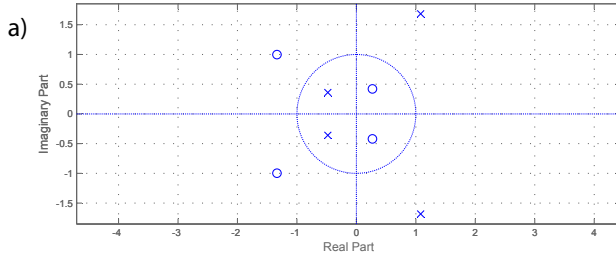


ECEn 487 - Introduction to Digital Signal Processing

Winter 2013

Quiz 5

1. I have the following pole-zero diagrams for four different causal, LTI system filters.



I) (1 pt) Which filters are stable?

II) (1 pt) Which filters are FIR?

III) (1 pt) Which filters are minimum-phase?

IV) (1 pt) Which filters are generalized linear-phase?

V) (2 pts) Indicate for each filter if it is all-pass, low-pass, high-pass, or band-pass

- a)
- b)
- c)
- d)

2. (2 pts) Suppose you have a sequence  $\tilde{x}[n]$ , which is periodic with a period of  $N = 10$ . What is the resulting sequence  $\tilde{x}[n - 10] + \tilde{x}[n + 20]$ ?

3. (2 pts) Suppose I have sequences  $\tilde{x}[n]$  and  $\tilde{y}[n]$  that are periodic with a period of 7. If I find the discrete Fourier Series for each of these,  $\tilde{X}[k]$  and  $\tilde{Y}[k]$ , respectively, then what is the resulting sequence,  $\tilde{z}[n]$ , if  $\tilde{Z}[k] = 2\tilde{X}[k] - 3\tilde{Y}[k]$ .