

Digsig5

jostegj

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# 1 Problem 1

## 1.1 b

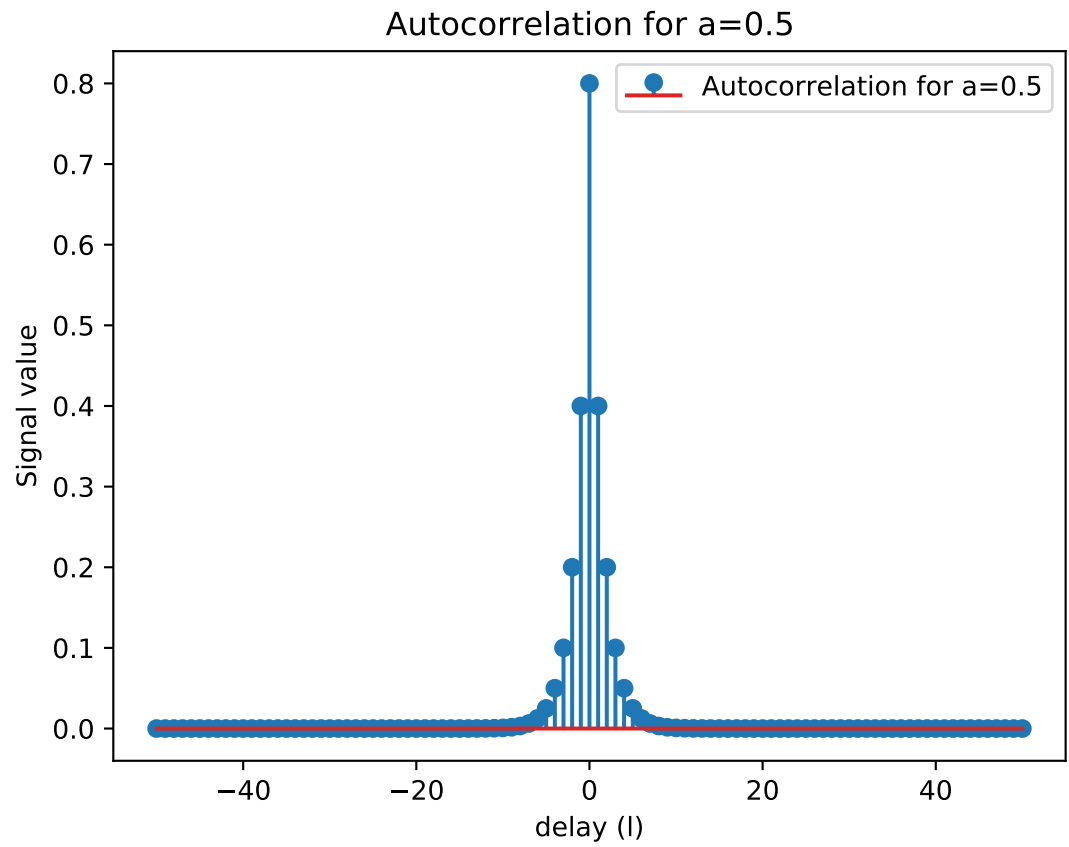


Figure 1: autocorrelation  $a = 0.5$

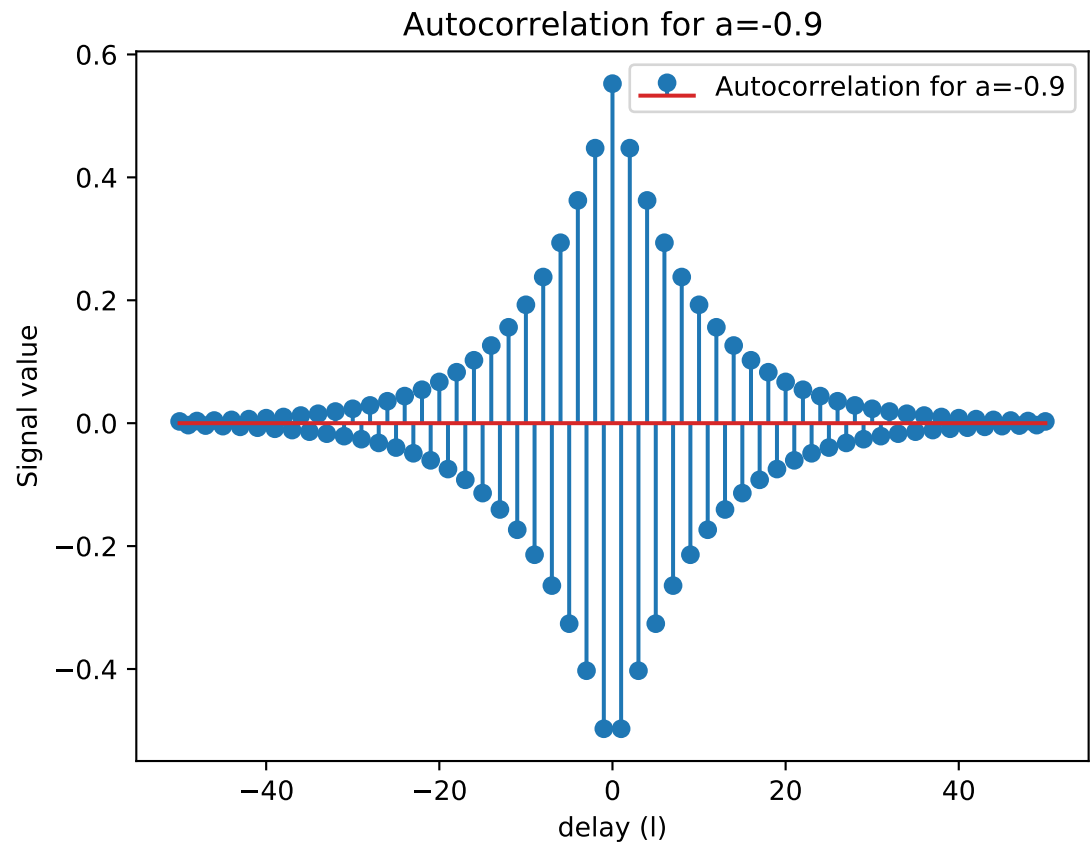


Figure 2: autocorrelation  $a = -0.9$

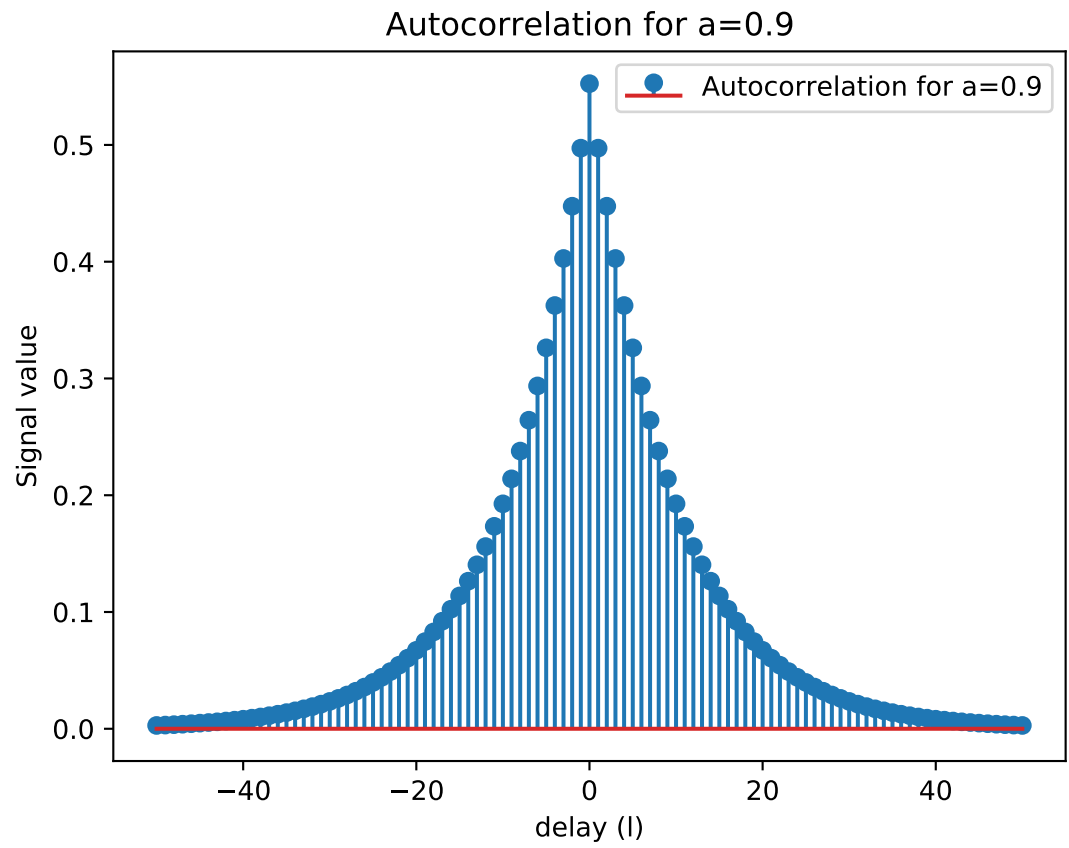


Figure 3: autocorrelation  $a = 0.9$

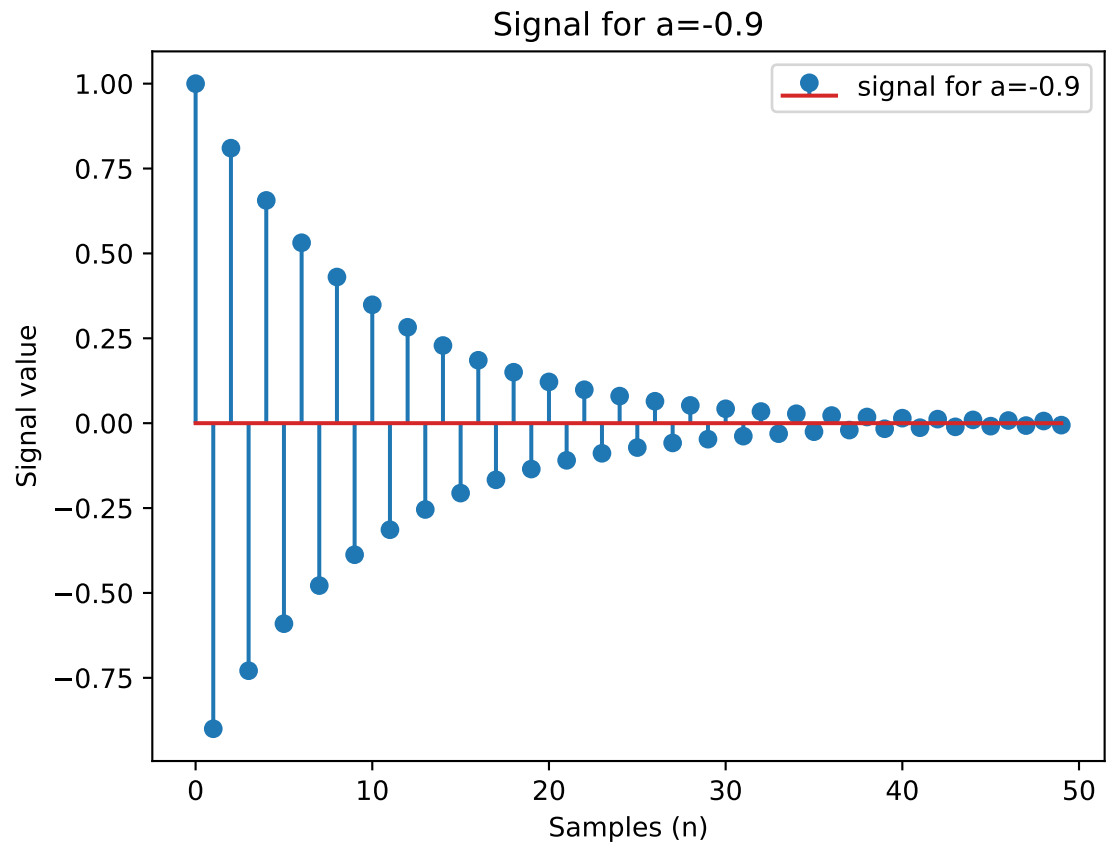


Figure 4: Signal  $a=-0.9$

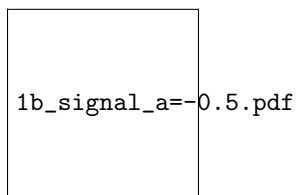


Figure 6: Signal  $a=0.5$

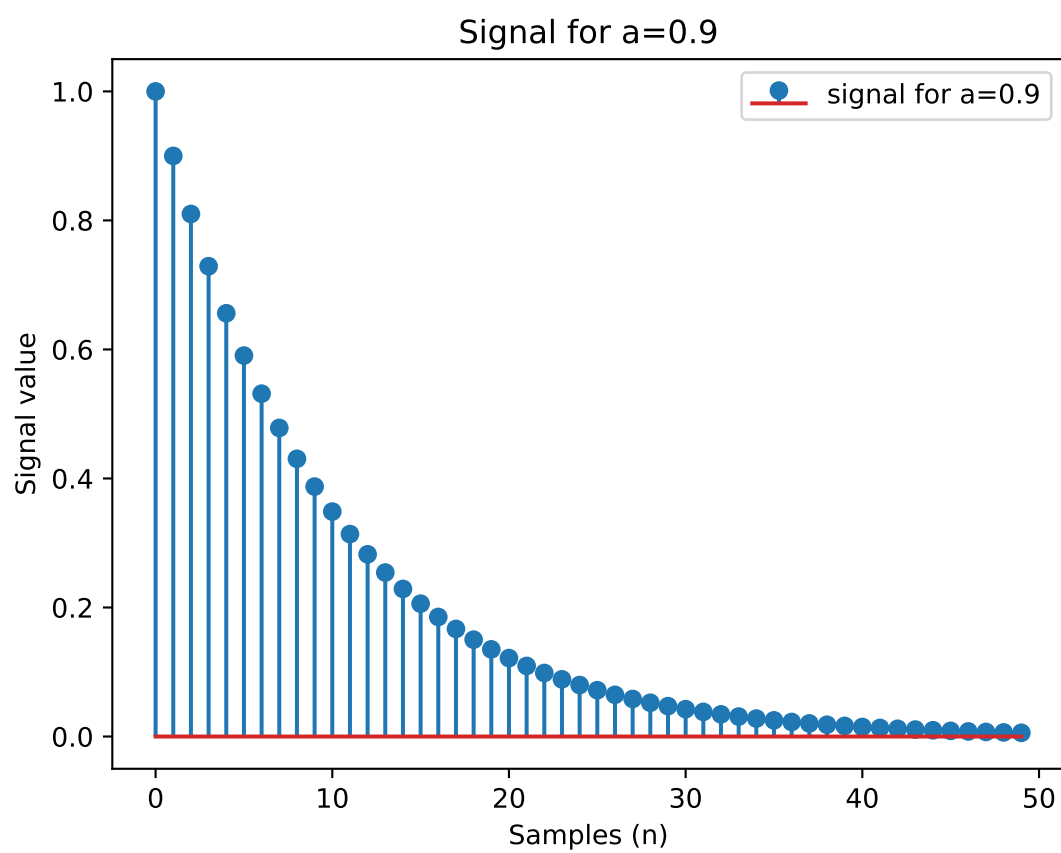


Figure 5: Signal  $a=-0.5$

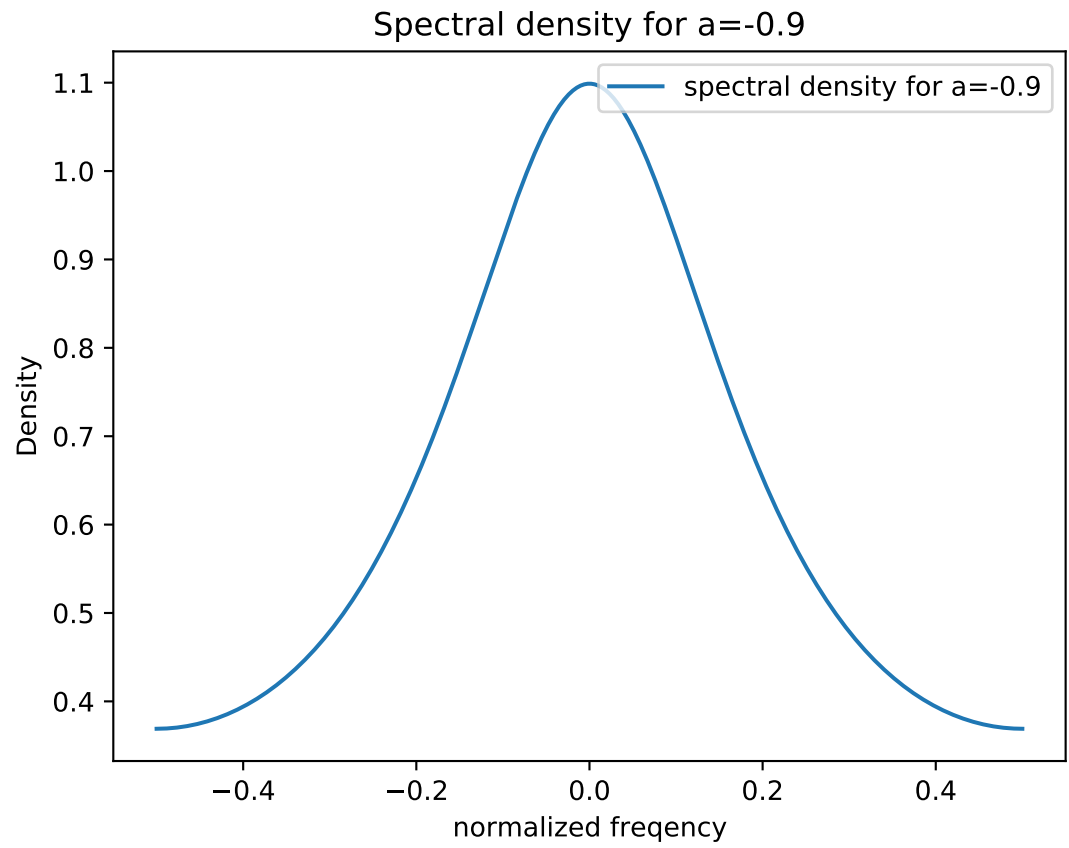


Figure 7: Signal  $a=-0.9$

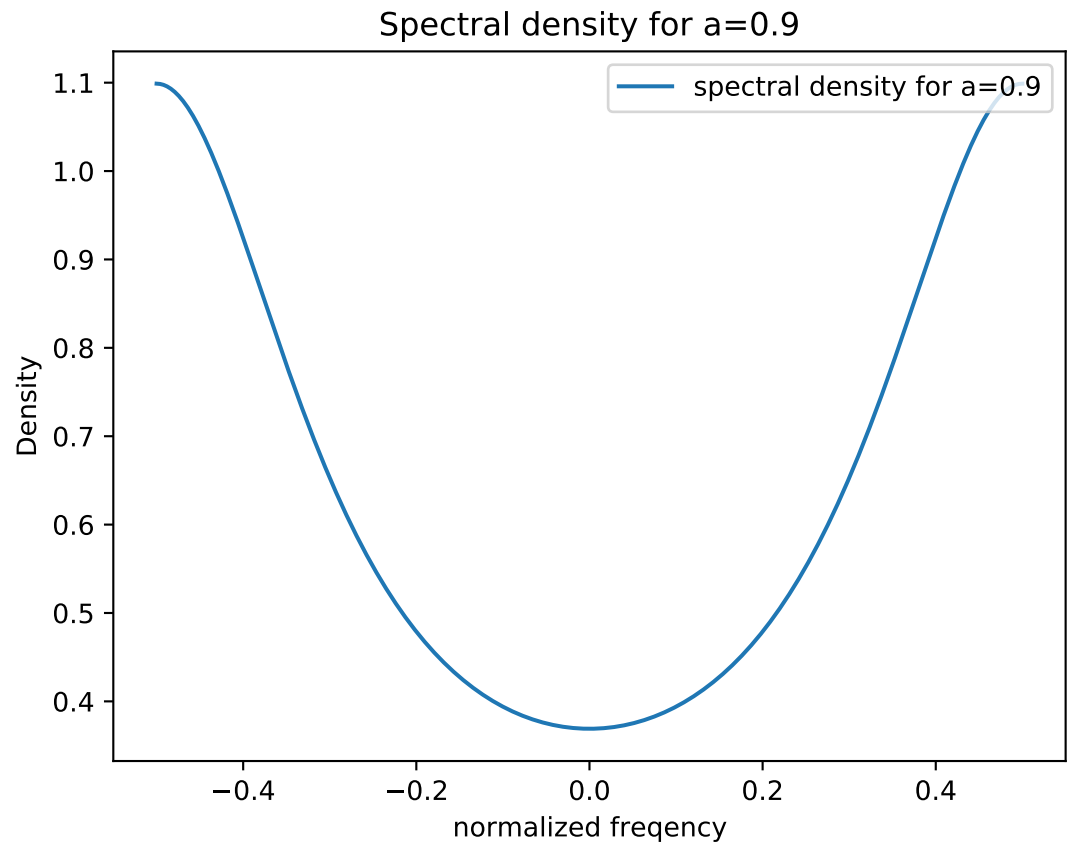


Figure 8: Signal  $a=0.9$



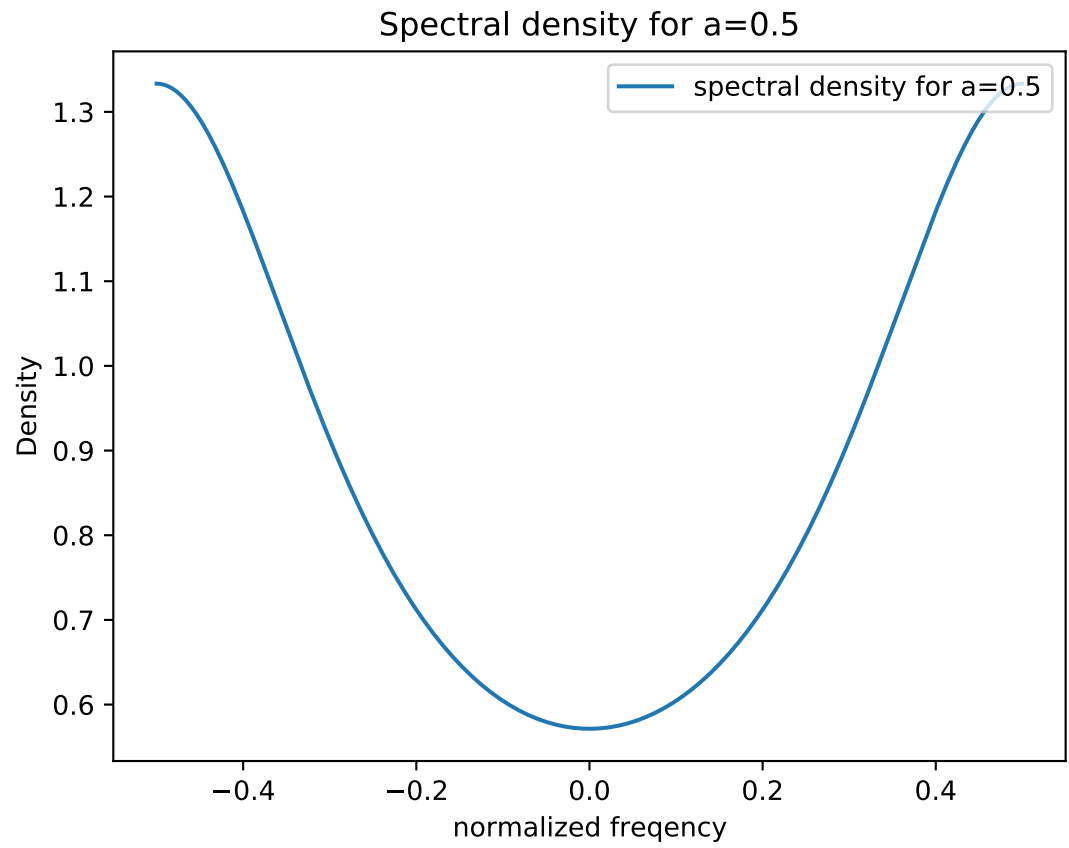


Figure 9: Signal  $a=0.5$

1.2 e

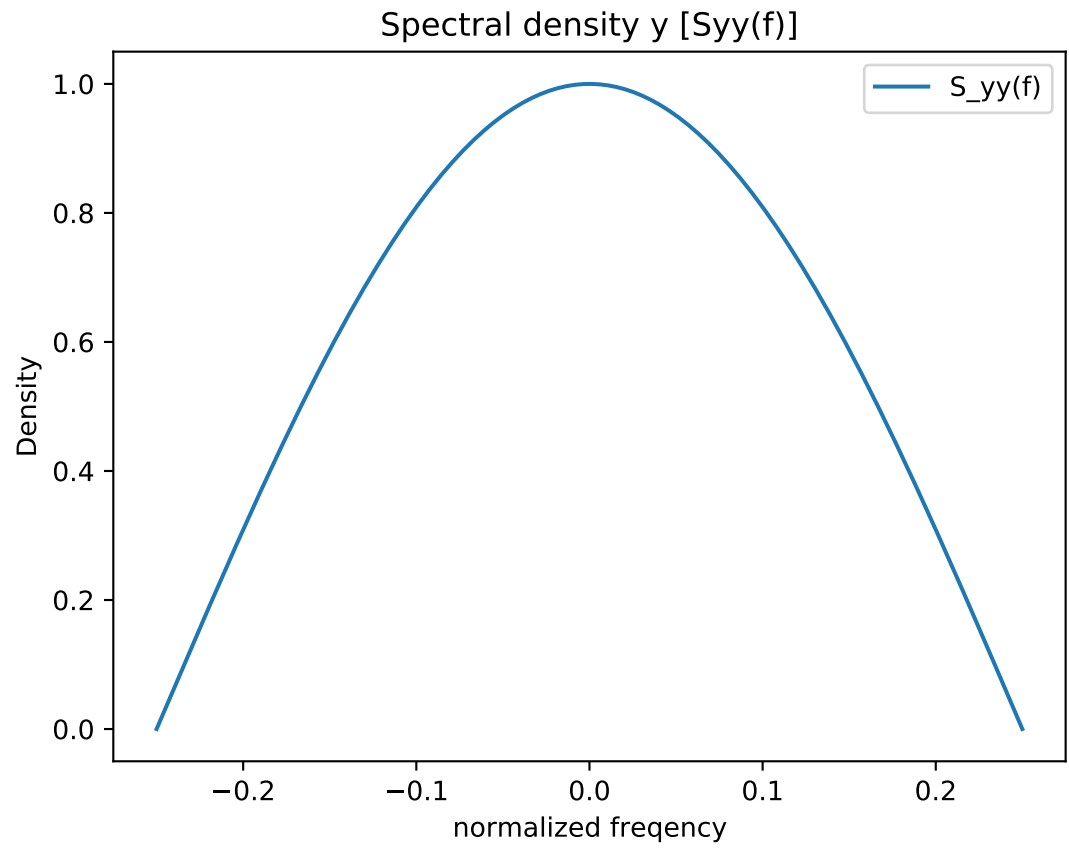


Figure 10: Spectral density of filtered signal

## 2 Problem 2

### 2.1 a

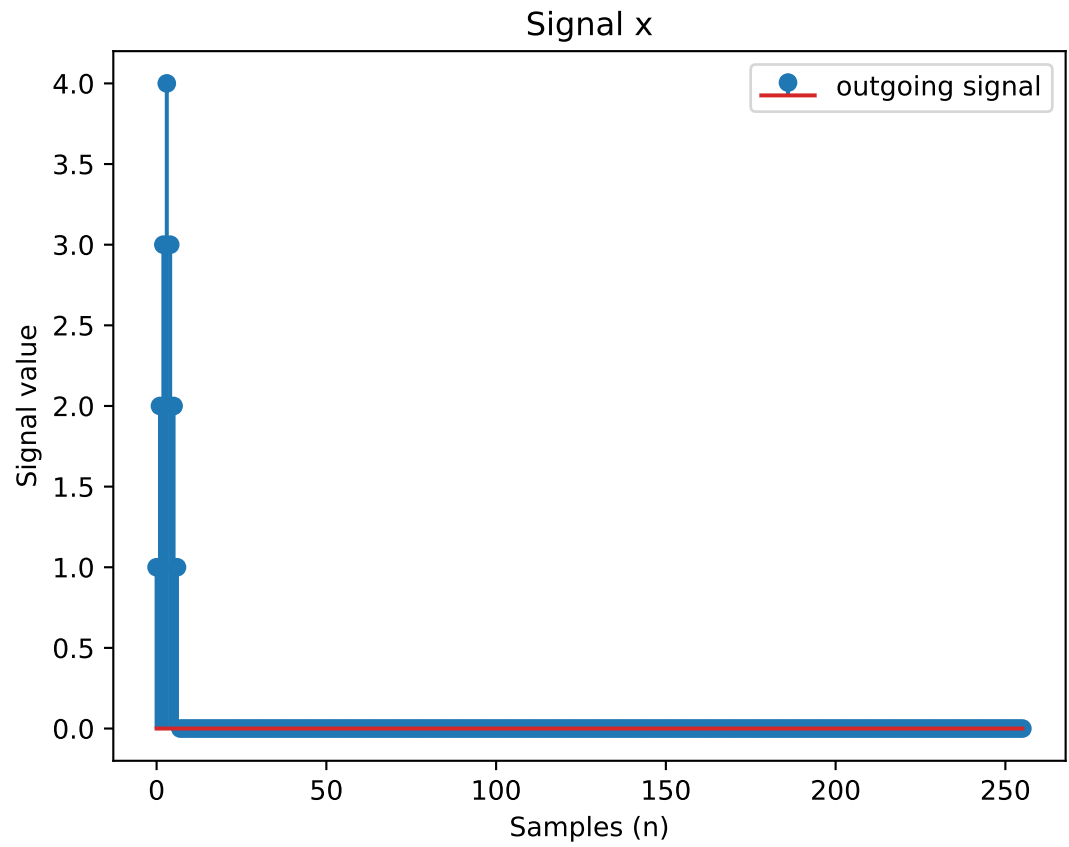


Figure 11: signal x for task 2

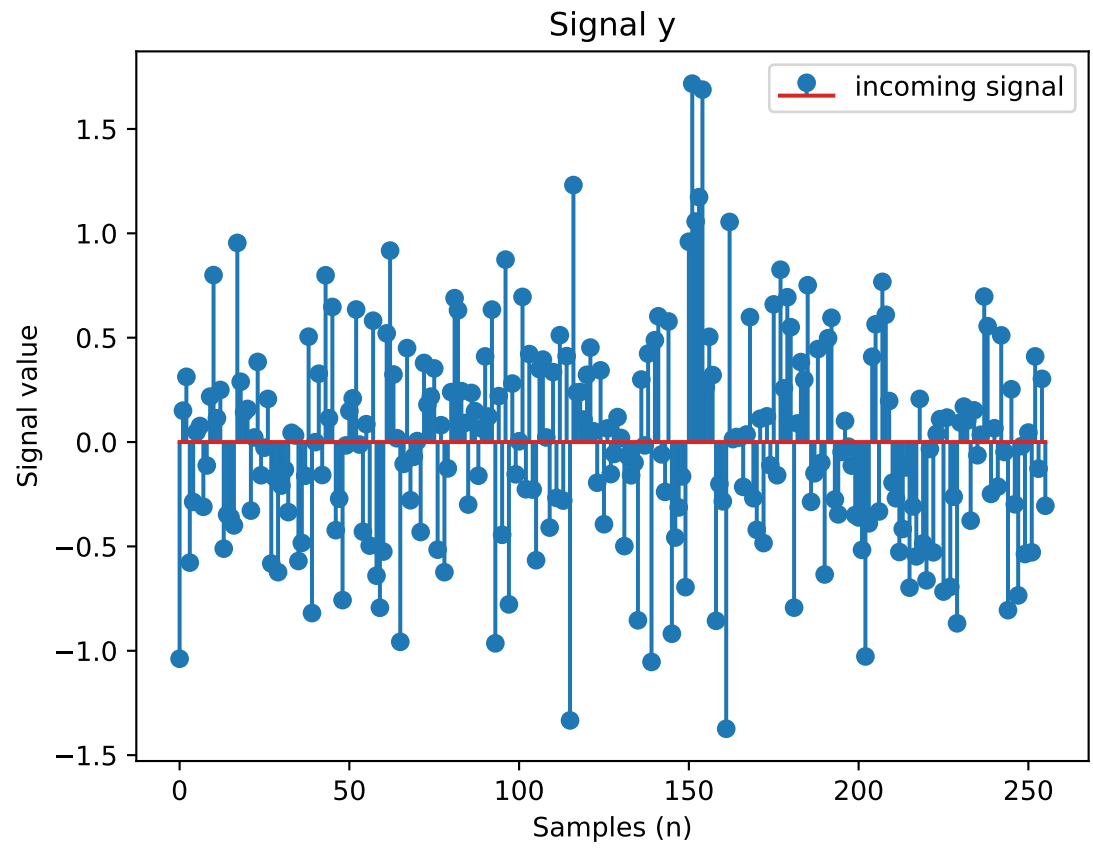


Figure 12: signal y for task 2

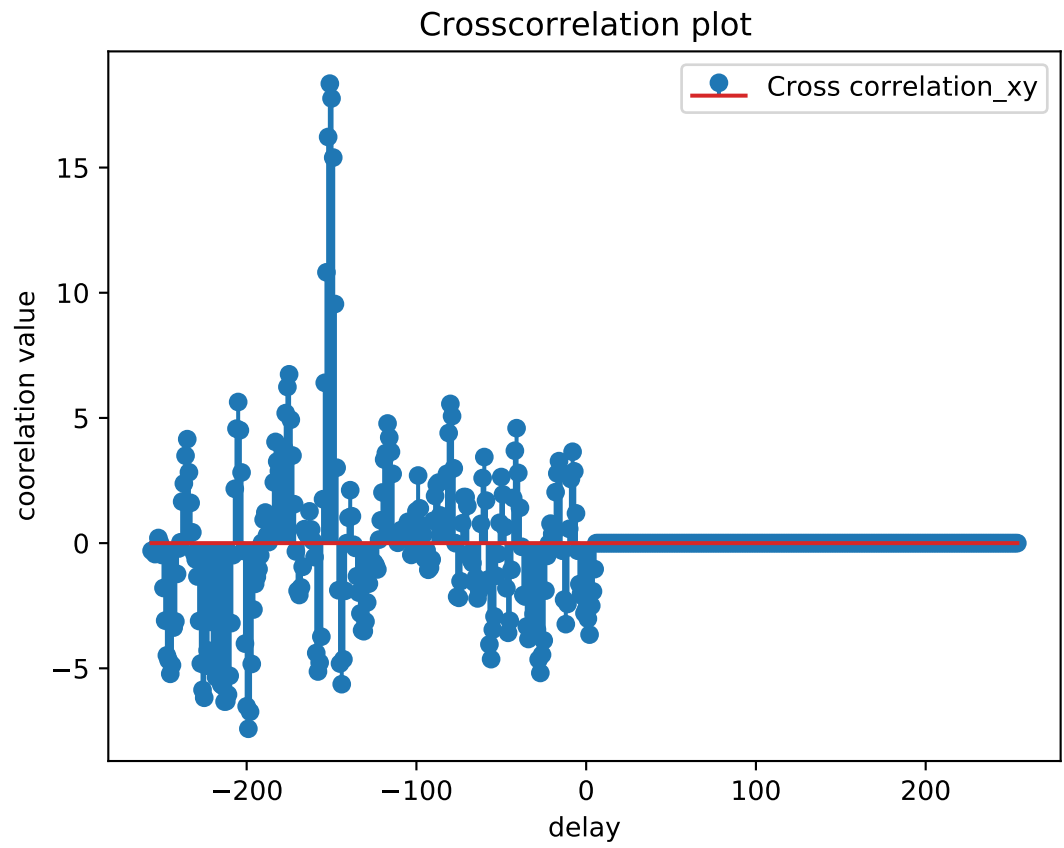


Figure 13:  $r_{xy}(l)$

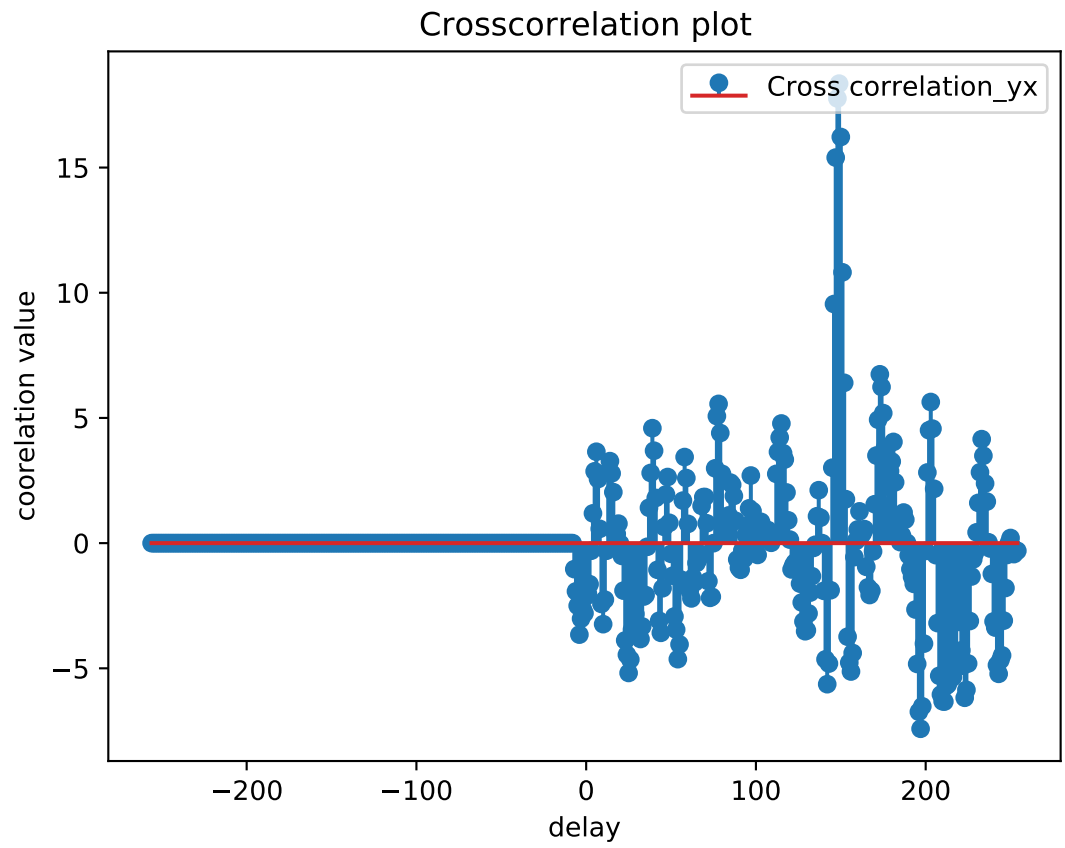


Figure 14:  $r_{yx}(l)$

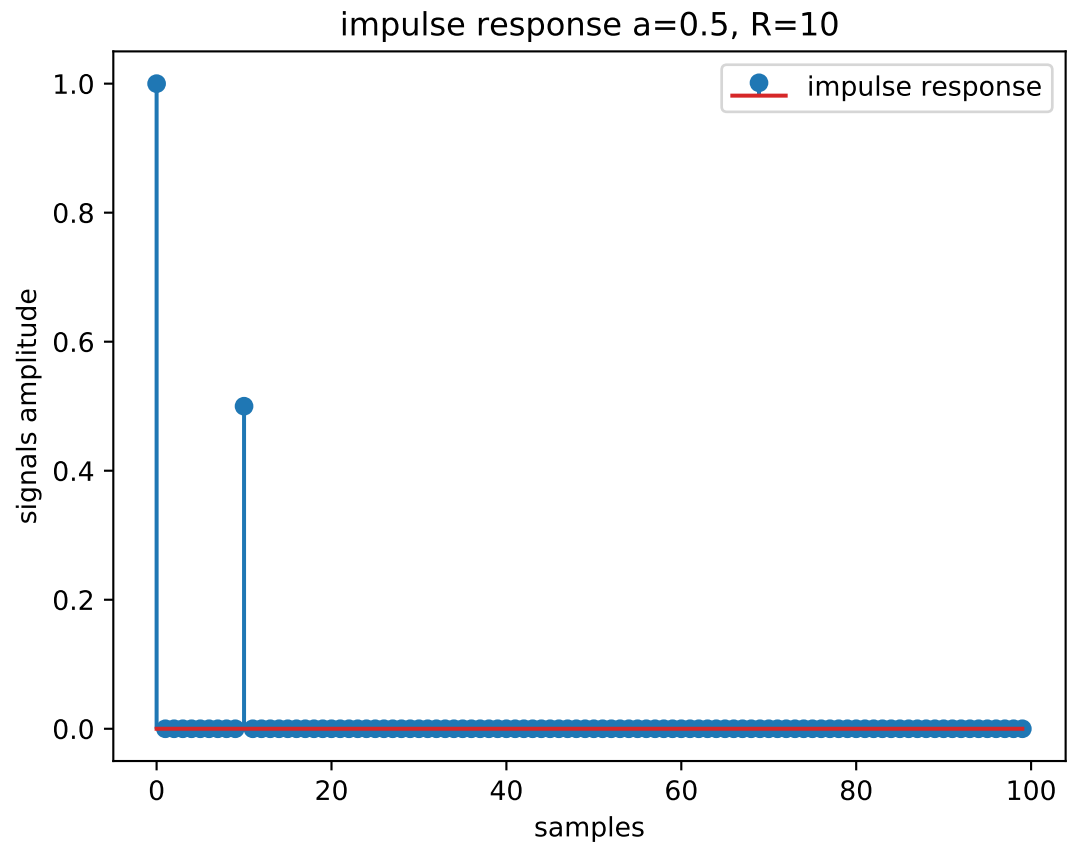


Figure 15: impulse response for  $a = 0.5$ ,  $R = 10$

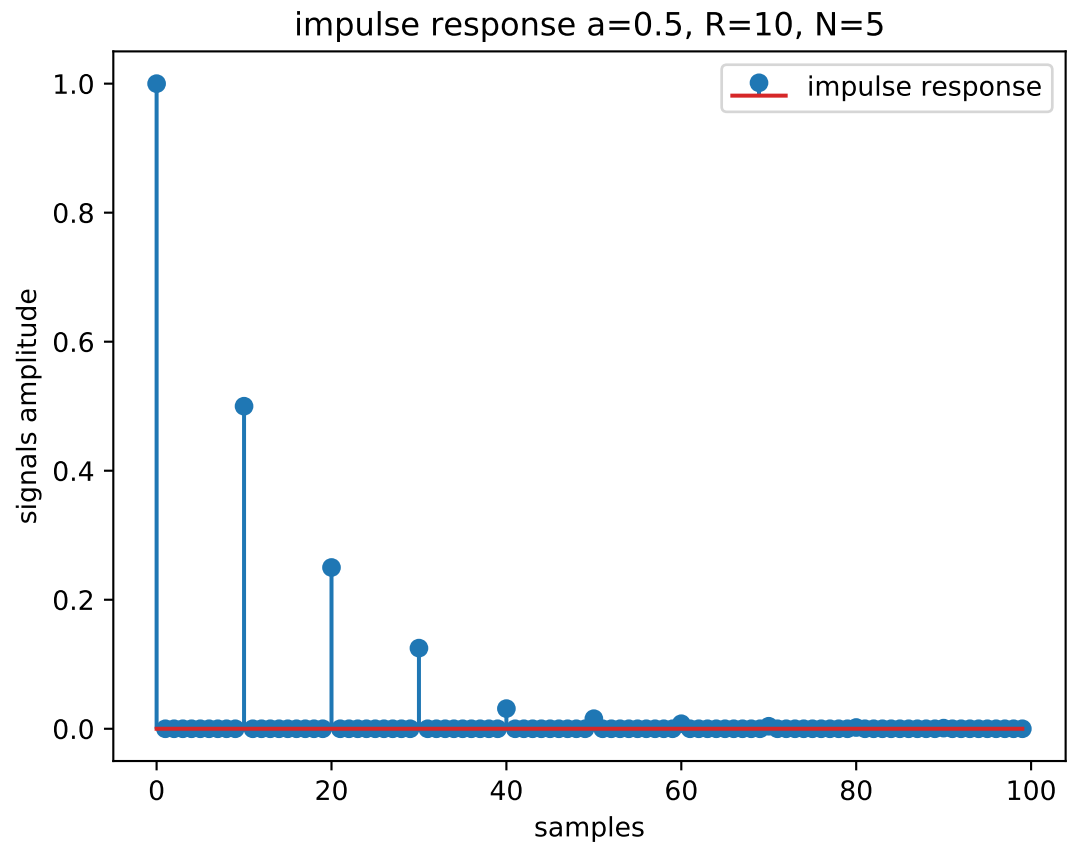


Figure 16: impulse response for  $a = 0.5$ ,  $R = 10$ ,  $N = 5$



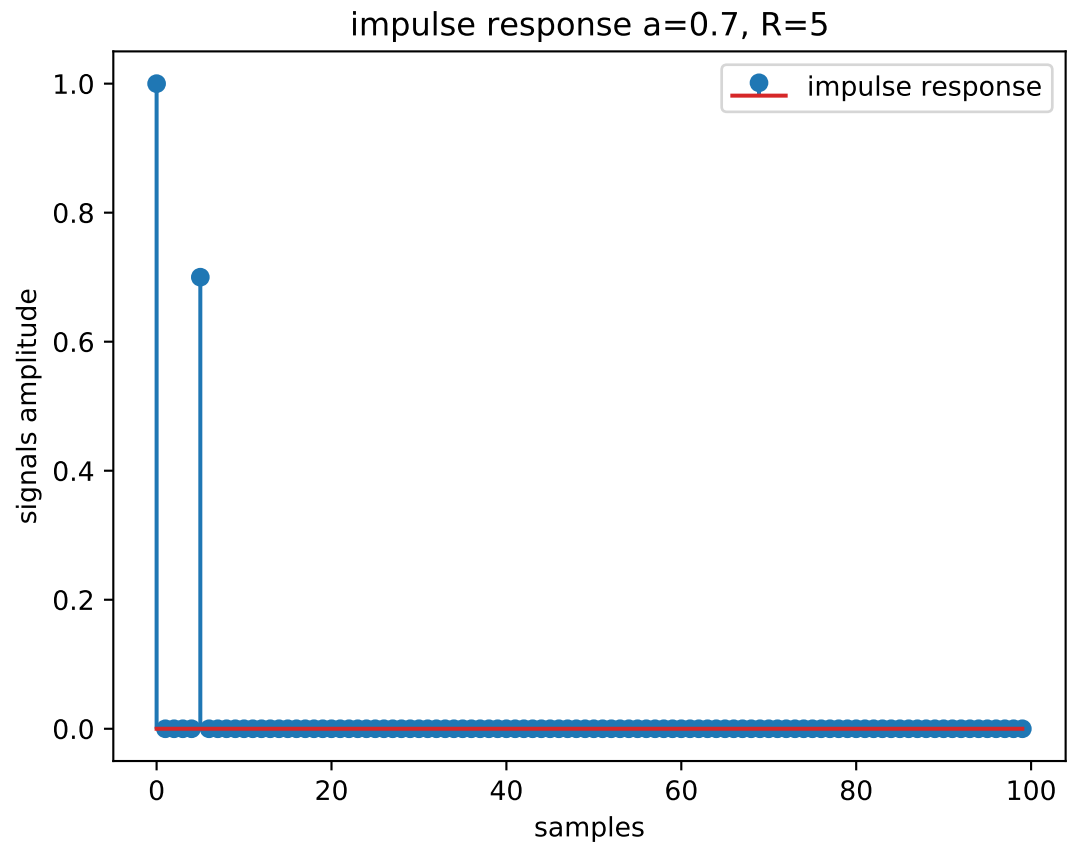


Figure 17: impulse response for  $a = 0.7$ ,  $R = 5$

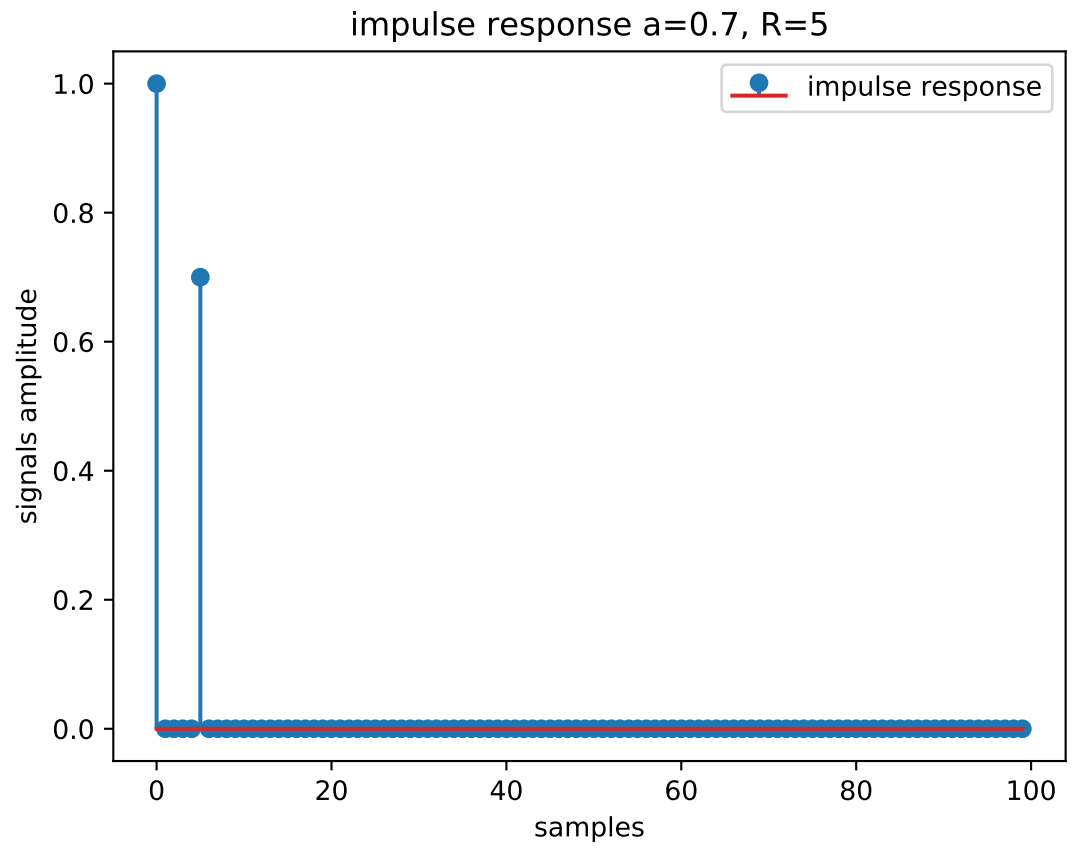


Figure 18: impulse response for  $a = 0.7$ ,  $R = 5N = 10$