

MATLAB for SMS

Summer 2011

Solutions to Problem Set 1

1. `A = rand(1,1000);`
 - a. `median_A = median(A)`
 - b. `max_A = max(A); min_A = min(A);`
 - c. `[mag,index] = max(A); [row col] = ind2sub(size(A),index);`
 - d. `reshape_A = reshape(A,20,size(A,2)/20);`
`[mag,col] = max(max(A));`
`[mag,row] = max(max(A,2));`
2. `A = normrnd(25,5,1,100);`
 - a. `mean_A = mean(A); std_A = std(A);` They're probably off a little bit.
 - b. `median_A = median(A);`
 - c. A normal distribution is symmetric about its mean value. Symmetry means that if the distribution were truly normal the mean and median would be equivalent. If they aren't, this indicates asymmetry (i.e., nonzero skewness). In the case of our normally sampled vector `A`, appreciable deviation between the mean and median indicates our population sample isn't large enough to approximate the distribution accurately.
3. `A_linear = linspace(0,1000,30);`
4. `A_log = logspace(0,1000,30);`
5. `diff_A_linear = diff(A_linear);`
`diff_A_log = diff(A_log);`

The logarithmically spaced vector does not have constant spacing intervals.
6. `cumsum_A_linear = cumsum(A_linear); cumsum_A_log = cumsum(A_log);`
`cumprod_A_linear = cumprod(A_linear); cumprod_A_log = cumprod(A_log);`