# Exercise 5

Total Points = (12.5/20), Feel free to clarify things with me (via email/in person)

## Question 1 : Equations of Motion

Correct **(2/2)**

## Question 2 : Autocorrelation Function

You have the wrong pdot in the code. I'm not sure why you got it wrong, despite getting it right in the previous answer.
Anyways, your autocorrelation is correct, but you could have chosen smaller W and tmax for saving time. **(3/3)**

## Question 3 : Autocorrelation for different bin sizes

Correct, could have done for smaller bin sizes to see the effect better, but still good. **(5/5)**

## Question 4 : Error dependence on bin size

You had the wrong idea about how to compute the error. You were supposed to bin the array, then perform bootstrap on the binned array, to get the actual error. **(2.5/5)**
Also, the reason you get the "list out of range" error is because random.randint(0,n) returns numbers from [0,n], however, np.random.randint(0,n) returns only till n-1.

## Question 5 : Error dependence on ensemble size

Wrong implementation **(1/5)**

Note : (-1) for getting the leapfrog wrong.