Chem 30324, Spring 2020, Homework 1

Due on January 22, 2020

Problem 1: Discrete, probably

In five card study, a poker player is dealt five cards from a standard deck of 52 cards.

```
import numpy as np
from scipy import linalg          #contains certain operators you may need for
import matplotlib.pyplot as plt   #contains everything you need to create plots
import sympy as sy
from scipy.integrate import quad
```

1. How many different 5-card hands are there? (Remember, in poker the orc *not* matter.)

```
import math
total=factorial(52)/factorial(52-5)/factorial(5)
print('Different 5-card hands =\t',total) # Pick 5 cards from 52 cards 5C52
```

```
Different 5-card hands =         2598960
```

2. What is the probability of being dealt four of a kind (a card of the same ra

```
print('The probability of being dealt four of a kind =\t',round(13*(52-4)/total
# First pick a kind (1C13), then one card from the remaining 48 cards (1C48)
# round() returns x rounded to n digits from the decimal point
```

```
The probability of being dealt four of a kind =  0.000240096
```

3. What is the probability of being dealt a flush (five cards of the same suit)

```
print('The probability of being dealt a flush =\t',round(4*math.factorial(13)/m
#4 suites * 5C13 (Pick 5 cards from 13 cards)
```