Quiz 2

100 points (10 points per problem)
(Version B)

Problem 1

The following is a class definition. Write the code necessary to use the class to set and then add the 'A' and 'B' properties

```
classdef Adder < handle
  properties
      A
      B
  end
  methods
      function Out=addEm(obj)
          Out=obj.A+obj.B;
      end
  end
end
```

Problem 2

For each of the following, state which distribution type the results will follow (Uniform, Normal, etc.)

```
X=sum(randn(10^5,10),2)
```

```
P=.002
N=1000
X=sum(P>(rand(N,10^5)))
```

```
P=.002
N=1000000
E=find(P>rand(N,1))
X=E(2:end)-E(1:end-1)
```

Problem 3

Show how to generate random numbers from the distribution

$$f(x) = 3x^2$$

where x can be between 0 and 1.

Problem 4

Briefly state or describe the Central Limit Theorem.

Problem 5

In your homework, you created a 'RK4' class. Write the anonymous function that you would need for a simple (undamped, undriven) mass on a spring.

Problem 6

Add the missing code that will produce the output below.

```
syms x(t) b
Dx=
dsolve(
```

```
ans =

C11*exp(b*t)
```

Problem 4

Describe the difference between the Euler method and the fourth-order Runge-Kutta method.

Problem 8

Draw what the histogram would look like for the following:

```
X =

    1.3011
    0.1577
    2.1585
    0.2273
    1.0913
    1.0647
    1.3625
    0.6575
    0.6225
```

```
hist(X,(0:3))
```

Problem 9

```
A =

     2     1
     3     4


B =

     4     3
     5     1
```

```
Write the output for:
```

```
A*B
```

and

```
A.*B
```

Problem 10

What is the most useful thing you have learned so far in 290?