

# HW12

December 7, 2019

```
[22]: #1a)
      b = log(2)/5500
```

```
[22]: 0.00012602676010180824
```

```
[2]: #1b)
     t = -log(0.9)/log(2)*5500
```

```
[2]: 836.0170139477749
```

```
[3]: A = [4 -2 1; 6 8 -5; 7 9 10]
     B = [6 9 -4; 7 5 3; -8 2 1]
     C = [-4 -5 2; 10 6 1; 3 -9 8]
     #2a)
     two_a = A*(B+C)
     two_b = A*B + A*C
     println(two_a)
     println(two_b)
```

```
[-31 -13 -7; 173 147 -25; 117 57 112]
[-31 -13 -7; 173 147 -25; 117 57 112]
```

```
[4]: #2b)
     println((A*B)*C)
     println(A*(B*C))
```

```
[209 347 -136; 297 -111 308; 1207 562 250]
[209 347 -136; 297 -111 308; 1207 562 250]
```

```
[5]: #3)
     function cubic(x1,y1,x2,y2,x3,y3,x4,y4)
         b = [y1; y2; y3; y4]
         A = [x1^3 x1^2 x1 1; x2^3 x2^2 x2 1; x3^3 x3^2 x3 1; x4^3 x4^2 x4 1]
         c = A\b
     end
     println("The coefficients are " ,cubic(-2,-20,0,4,2,68,4,508))
```

```
The coefficients are [7.0, 5.0, -6.0, 4.0]
```

[6]: #4) #The numbers are uniformly distributed with the desired mean

```
a = 2
b = 18
diff = b-a
r = rand(1000)
y = diff*r .+ a
using Statistics
Statistics.mean(y)
```

[6]: 9.990368891699447

[7]: #5) The Mean & STD match what we desired

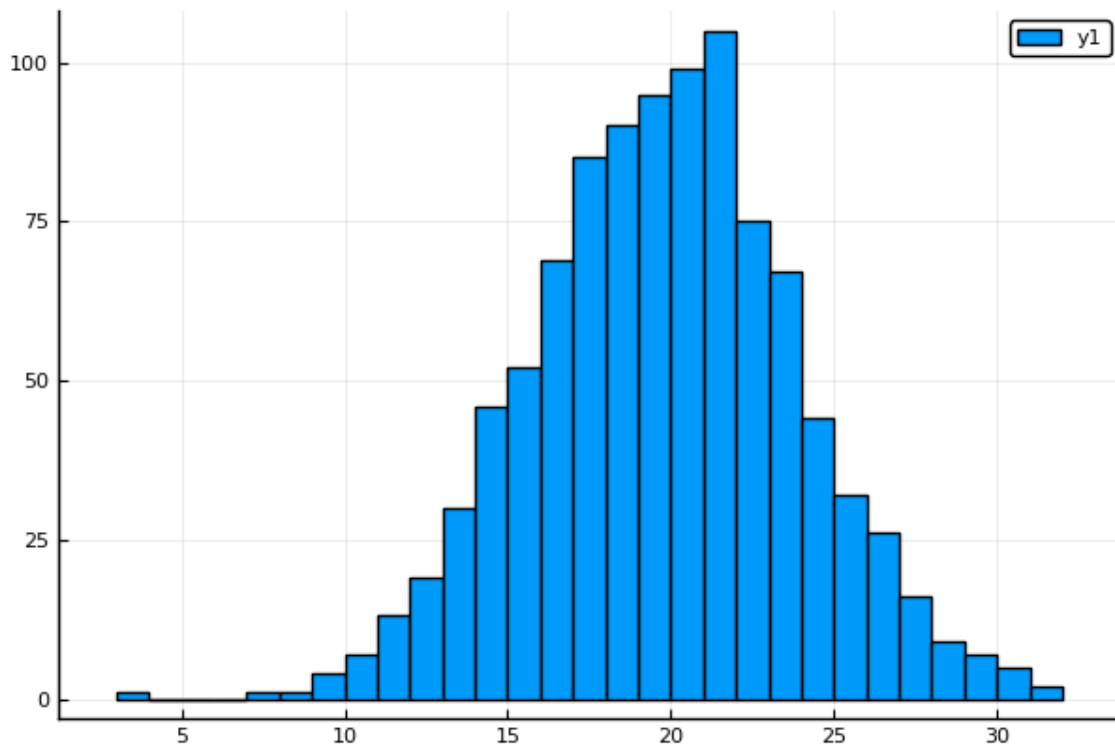
```
using Random, Distributions
d = Normal(20,4)
j = rand(d,1000)
println(Statistics.mean(j))
println(Statistics.std(j))
```

19.797694112806834

4.048516862532985

[24]: using Plots  
Plots.histogram(j)

[24]:



[33]: #6)

```
xx = Normal(8,sqrt(2))
yy = Normal(15,2)
x = rand(xx,100)
y = rand(yy,100)

using Statistics
println(Statistics.mean(x))
println(Statistics.mean(y))
println(Statistics.var(x))
println(Statistics.var(y))

z1 = x + y
z2 = x-y
println(Statistics.mean(z1))
println(Statistics.var(z1))
println(Statistics.mean(z2))
println(Statistics.var(z2))
```

```
8.62238873868121
9.006778607373844
1.5890905452130304
1.6134864282048804
17.629167346055052
3.0806329643713823
-0.3843898686926336
3.3245209824644384
```

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