Class 4, Homework Assignment

Question 1 (2 points). Create a vector with intergers from 1 to 10 can call it 'a'. Use operators to create indices for values that satisfy each one of the following conditions: (1) less than 3, (2) equal to 5, (3) not equal to 7, and (4) are odd numbers.

```
a <- 1:10
which(a < 3)
```

```
## [1] 1 2
```

```
which(a == 5)
```

```
## [1] 5
```

```
which(a != 7)
```

```
## [1]  1  2  3  4  5  6  8  9 10
```

```
which(a %% 2 == 1)
```

```
## [1] 1 3 5 7 9
```

Question 2 (2 points). Create a vector with these values: 1.1, -2.2, 3.3, -4.4, 5.5 and call it 'b'. Calculate the square, square root, logarithm, and exponential of the absolute of these values.

```
b <- c(1.1, -2.2, 3.3, -4.4, 5.5)
abs(b) ^ 2
```

```
## [1]  1.21  4.84 10.89 19.36 30.25
```

```
sqrt(abs(b))
```

```
## [1] 1.048809 1.483240 1.816590 2.097618 2.345208
```

```
log(abs(b))
```

```
## [1] 0.09531018 0.78845736 1.19392247 1.48160454 1.70474809
```

```
exp(abs(b))
```

```
## [1]   3.004166   9.025013  27.112639  81.450869 244.691932
```

Question 3 (2 points). Generate a vector with 10 random numbers and call it 'v' using the code provided below. Then Calculate the mean, variance, standard deviation, and range of 'v'.

```
v <- rnorm(n=10, mean=0, sd=1)
```

```
mean(v)
```

```
## [1] 0.03093293
```

```r
var(v)
```

```
## [1] 0.3196722
```

```r
sd(v)
```

```
## [1] 0.5653956
```

```r
range(v)
```

```
## [1] -0.9350513  0.6476869
```

Question 4 (2 points). Create a vector with a sequence of intergers from 1 to 10 and call it 'v1'. Create another vector with a sequence of values from -4 to 6 with an interval of 0.5 and call it 'v2'. Create another vector with a sequence of 9 values from 4 to 8 and call it 'v3'. What values in 'v3' are also in 'v1' and 'v2'?

```r
v1 <- seq(from=1, to=10, by=1)
v2 <- seq(from=-4, to=6, by=.5)
v3 <- seq(from=4, to=8, length.out=9)
v3[which(v3 %in% v1 & v3 %in% v2)]
```

```
## [1] 4 5 6
```

Question 5 (2 points). Create a vector with six consecutive 2 and six consecutive 3 and call it 'r1', Create another vector with a sequence of integers from 1 to 3 call it 'r2'. Add these two vectors and call it 'r3'. What is the largest even numbers in 'r3'?

```r
r1 <- rep(c(2,3), each=6)
r2 <- 1:3
r3 <- r1 + r2
max(r3[which(r3 %% 2 == 0)])
```

```
## [1] 6
```