LAB 1 - Intro to R Solution

MATH224 - Intro to Stat

Exercise 1

```
(2.59 - 22/7)/(10 - sqrt(23)) #3 Points
```

```
## [1] -0.1062335
```

Exercise 2

Part 1

```
log(pi) #2 Points
```

```
## [1] 1.14473
```

Part 2

```
exp(2*pi^2) #2 Points
```

```
## [1] 373791533
```

OR

```
log(exp(2*pi^2))
```

```
## [1] 19.73921
```

Exercise 3

```
a = 3 #4 Points
b = 7

(a+b)^2
```

```
## [1] 100
```

```
a^2 + 2*a*b + b^2
```

```
## [1] 100
```

As we can see, both $(a+b)^2$ and $a^2+2ab+b^2$ output the same numbers.

Exercise 4

```
x1 = c(1,2,3,4,5) #3 Points
x2 = c(6,9,1,11,5)

(x1^2 + x2)/2
```

```
## [1]  3.5  6.5  5.0 13.5 15.0
```

Exercise 5

```
x3 = c(7,6,8,5,5,9,1) #4 Points
x4 = c(1,2,3)

x3 + x4
```

```
## [1]  8  8 11  6  7 12  2
```

We still obtain a result even though x3 and x4 are vectors with different lengths. This is because R replicates the smaller vector multiple times to match the size of the larger vector. That is, in the background R creates x4 as `x4 = c(1,2,3,1,2,3,1)` which is of length 7, same as x3. This makes sense based on the output given for the addition.

Exercise 6

```
glimpse(arbuthnot) #Not necessary for the exercise
```

```
## Rows: 82
## Columns: 3
## $ year  <int> 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639~
## $ boys  <int> 5218, 4858, 4422, 4994, 5158, 5035, 5106, 4917, 4703, 5359, 5366~
## $ girls <int> 4683, 4457, 4102, 4590, 4839, 4820, 4928, 4605, 4457, 4952, 4784~
```

```
arbuthnot$girls #2 Points
```

```
##  [1] 4683 4457 4102 4590 4839 4820 4928 4605 4457 4952 4784 5332 5200 4910 4617
## [16] 3997 3919 3395 3536 3181 2746 2722 2840 2908 2959 3179 3349 3382 3289 3013
## [31] 2781 3247 4107 4803 4881 5681 4858 4319 5322 5560 5829 5719 6061 6120 5822
## [46] 5738 5717 5847 6203 6033 6041 6299 6533 6744 7158 7127 7246 7119 7214 7101
## [61] 7167 7302 7392 7316 7483 6647 6713 7229 7767 7626 7452 7061 7514 7656 7683
## [76] 5738 7779 7417 7687 7623 7380 7288
```