R Markdown Template

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Problem 1

Sub Problem 1.1

I am going to show some code in R that performs matrix multiplication of a 2×3 matrix A and a 3×4 matrix B.

```
#We first set our random seed
set.seed(2021)

#Let's create A as a matrix of standard normal random variates
A = matrix(rnorm(6), nrow = 2, ncol = 3)

#We'll create B as a matrix of variates from a normal distribution
#with mean 0 and a standard deviation of 2
B = matrix(rnorm(12, mean = 0, sd = 2), nrow = 3, ncol = 4)


#Now, we will print A, B, and the matrix product AB
A
```

```
##            [,1]      [,2]       [,3]
## [1,] -0.1224600 0.3486495  0.8980537
## [2,]  0.5524566 0.3596322 -1.9225695
```

```
B
```

```
##            [,1]       [,2]      [,3]      [,4]
## [1,] 0.52348873  3.4599263 0.3639908 -3.682951
## [2,] 1.83113274 -2.1644097 3.0170836  3.246620
## [3,] 0.02754388 -0.5456504 3.2089402  0.262778
```

```
A%*%B
```

```
##           [,1]      [,2]      [,3]      [,4]
## [1,] 0.5990530 -1.668346  3.889131  1.818936
## [2,] 0.8947842  2.182118 -4.883281 -1.372290
```

We can even put in some text here and refer to the matrices A and B from a subsequent code block. In other words, code in a certain block can refer to results from earlier code blocks.

```r
print(A[1,1] + B[2,3])
```

```
## [1] 2.894624
```

Sub Problem 1.2

Note that we can also use LaTeX's display mode:

$$e^{i\pi} + 1 = 0$$

Problem 2

For calculations we do not actually want to run, we can set $eval = F$ at the beginning of the R block.

```r
rnorm(10^(10^10))
```

Problem 3

Note as a formatting guide that as in standard LaTeX multiple consecutive spaces are treated as only one space and that single newlines are treated as spaces. Multiple newlines

are treated as one newline.

Problem 4

Also note that **unlike LaTeX** you should not add spaces directly after the opening $ of a mathematical expression or directly before the closing $ of a mathematical expression. For example, $1 + 2$ will display correctly but both $ $1 + 2$ and $1 + 2 $ will display as text instead of math.