

# Applied Statistical Programming - Vectors and Functions: Messi

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**Write the R code to answer the following questions. Write the code and then show what the computer returns when that code is run. Make sure to change the appropriate header in the R code block to make this document compile.**

Please put your name at the top of this sheet of paper. You have until the beginning of class 1/26 at 10:00am to answer all of the questions below. You may use R, but not any online documentation. Submit the Rmarkdown and the knitted PDF to Canvas.

1.  $e^2$

```
#Code  
exp(2)
```

```
## [1] 7.389056
```

2.  $((4)^5)^{\frac{1}{8}}$

```
#Code  
((4)^5)^(1/8)
```

```
## [1] 2.378414
```

3.  $\sin(\frac{\pi}{3}) \times (1 + \tan(\frac{\pi}{3}))$

```
#Code  
sin(pi / 3) * (1 + tan(pi / 3))
```

```
## [1] 2.366025
```

4.  $\sqrt{14^3 - 6^{\frac{3}{2}}}$

```
#Code  
sqrt(14^3 - (6^(3/2)))
```

```
## [1] 52.24273
```

5.  $|\ln(2\pi \times (\sqrt{e^9}))|$

```
#Code  
abs(-(log(2 * pi * sqrt(exp(9)))))
```

```
## [1] 6.337877
```

6.  $\sum_{i=5}^{50} i^{i-1}$

```
#Code  
x <- c(5:50)  
sum(x^(x-1))
```

```
## [1] 1.789933e+83
```

7.  $\forall i \in [1, 50], \sqrt{i}$

*#Code*

```
y <- c(1:50)
sqrt(y)
```

```
## [1] 1.000000 1.414214 1.732051 2.000000 2.236068 2.449490 2.645751 2.828427
## [9] 3.000000 3.162278 3.316625 3.464102 3.605551 3.741657 3.872983 4.000000
## [17] 4.123106 4.242641 4.358899 4.472136 4.582576 4.690416 4.795832 4.898979
## [25] 5.000000 5.099020 5.196152 5.291503 5.385165 5.477226 5.567764 5.656854
## [33] 5.744563 5.830952 5.916080 6.000000 6.082763 6.164414 6.244998 6.324555
## [41] 6.403124 6.480741 6.557439 6.633250 6.708204 6.782330 6.855655 6.928203
## [49] 7.000000 7.071068
```