Math 151A - Spring 2020 - Week 1

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* Discussion sections will be recorded *

Office Hours: I will hold two fixed office hours per week via Zoom. Please fill out the Doodle poll by Sunday 7pm PST. I will also be available by appointment. Office hours will not be recorded.

Sum Example

$$\sum_{i=1}^{10} i = 1+2+3+\cdots+10$$

$$S_1 = \sum_{i=1}^{1} i = 1$$

$$S_2 = \sum_{i=1}^{2} i = 1+2 \longrightarrow S_2 = S_1 + 2$$

$$S_3 = S_2 + 3$$

$$\vdots$$

$$S_{10} = S_9 + 10$$

Product Example

$$\prod_{i=1}^{10} i = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdots 10$$

$$1$$

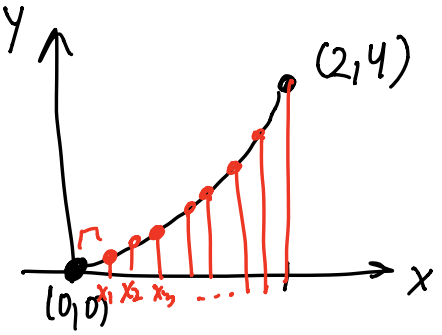
$$1 \cdot 2$$

$$1 \cdot 2 \cdot 3$$

$$\vdots$$

Graphing Example

Graph $y = x^2$ on $[0,2]$



x	y
0	0
2	4

vector of x values

vector of y values

$a = 0$

$\Delta x = \frac{b-a}{N}$ ← N = # slices

$x_i = a + i \cdot \Delta x$

```
>> 1 + 2

ans =

     3

>> 1 + 2;
>> a = 1

a =

     1

>> b = 2;
>> c = a + b

c =

     3

>> v = [1, 2, 3];
>> u = [4; 5; 6]

u =

     4
     5
     6

>> v

v =

     1     2     3

>> u + v

ans =

     5     6     7
     6     7     8
     7     8     9

>> % u + v is normally undefined, but Matlab has a mind of its own
>> A = [0, 2; 5, -7]

A =

     0     2
     5    -7

>> u(2)

ans =

     5

>> A(1,2)
```

```
ans =

     2

>> B = [1; 2, 3];
Error using vertcat
Dimensions of arrays being concatenated are not consistent.

>> u = zeros(1,10)

u =

     0     0     0     0     0     0     0     0     0     0

>> v = zeros(10,1)

v =

     0
     0
     0
     0
     0
     0
     0
     0
     0
     0

>> A = zeros(4,4)

A =

     0     0     0     0
     0     0     0     0
     0     0     0     0
     0     0     0     0

>> A = zeros(4)

A =

     0     0     0     0
     0     0     0     0
     0     0     0     0
     0     0     0     0

>> A = ones(3)

A =

     1     1     1
     1     1     1
     1     1     1

>> A = twos(3)
Unrecognized function or variable 'twos'.

Did you mean:
```

```
>> A = ones(3)

A =

     1     1     1
     1     1     1
     1     1     1

>> A = 2*A

A =

     2     2     2
     2     2     2
     2     2     2

>> pi

ans =

    3.1416

>> format long
>> pi

ans =

   3.141592653589793

>> format short
>> pi

ans =

    3.1416

>> sin(0)

ans =

     0

>> sin(pi)

ans =

   1.2246e-16

>> double(pi)

ans =

    3.1416

>> format long
>> sin(pi)

ans =
```

```
     1.224646799147353e-16

>> format short
>> sumexample
>> sumexample

sum =

    55

>> sumexample
    55

>> sumexample
The value of the sum is
    55

>> sumexample
The value of the sum is
   110

>> sumexample
The value of the sum is
   165

>> productexample
The product is
     0

>> productexample
The product is
     3628800

>> graphingexample
>> graphingexample
>> graphingexample
>> graphingexample
>> graphingexample
>> graphingexample
Error: File: graphingexample.m Line: 17 Column: 21
Invalid expression. Check for missing multiplication operator, missing or unbalanced↙
delimiters, or other syntax error.
To construct matrices, use brackets instead of parentheses.

>> graphingexample
>> graphingexample
Array indices must be positive integers or logical values.

Error in graphingexample (line 13)
    x(i) = a + i*dx;

>> graphingexample
>> graphingexample
>>
```