

Brian Masse (A17991084)  
Dr. Hammock  
MTH20D  
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MTH20D MatLab  
*Homework 1*

**Exercise 1.1**

- The final MatLab Quiz will be on Wednesday, June 5<sup>th</sup> to Thursday, June 6<sup>th</sup>. It is available in the quizzes section of canvas

**Exercise 1.2**

```
x = 50;  
b = 4;  
  
logb = log( x ) / log(b)  
      = 2.8219
```

**Exercise 1.3**

The command `m = -3:0.4:12` returns a vector, starting at -3, running to 12, with an interval of 0.4. This is a row vector, so without a semicolon MatLab displays 8 columns, of 1 value each at a time.

Typing in `m(26)` would return the face value at the linear index of 26. Matlab starts indexing at `i=1`, so `m(26)` returns 7.0000.

**Exercise 1.4**

*Original:* `z = 25 - (100 - 7exp(5+cos(pi/3)))`

*Error:* Invalid use of operator.

*Corrected:* `z = 25 - (100 - (7 * exp(5+cos(pi/3))))`

**Exercise 1.5**

*Input:* `p4 = asin(3)`  
*Output:* `1.570796326794897 - 1.762747174039086i`

**Exercise 1.6.a**

```
>> for i=0:6  
a * r^i  
end  
  
ans =  
1  
  
ans =  
0.3333333333333333  
  
ans =  
0.1111111111111111  
  
ans =  
0.037037037037037
```

```
ans =  
0.012345679012346
```

```
ans =  
0.004115226337449
```

```
ans =  
0.001371742112483
```

### **Exercise 1.6.b**

```
function geomSeq(n, r)  
    p6ba = 1;  
    p6br = 1/3;  
  
    for i=0: n-1  
        p6ba * r^i  
    end  
end
```

### **Exercise 1.6.c**

```
ans =  
1
```

```
ans =  
0.2500000000000000
```

```
ans =  
0.0625000000000000
```

```
ans =  
0.0156250000000000
```

```
ans =  
0.0039062500000000
```

```
ans =  
9.765625000000000e-04
```

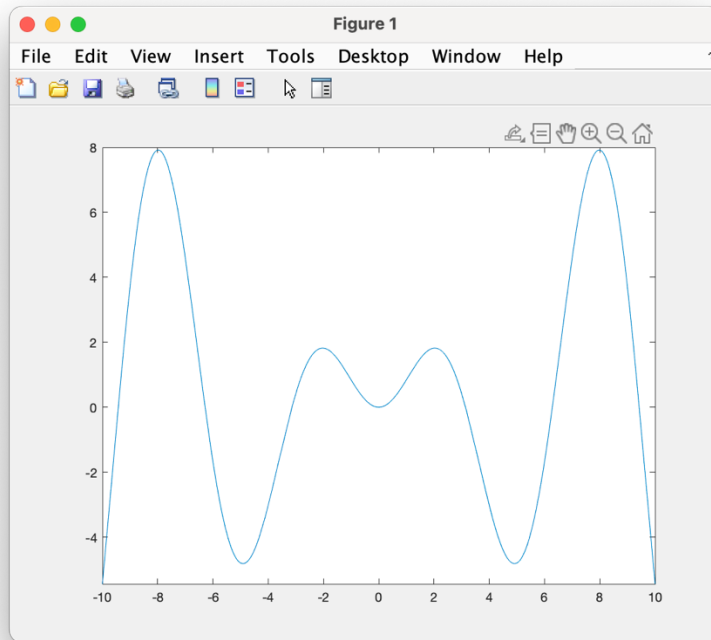
```
ans =  
2.441406250000000e-04
```

### **Exercise 1.7**

```
function mysum(n, r)  
    for i=0: n-1  
        1 / r^n  
    end  
end
```

### Exercise 1.8

```
g = @(x) sin(x)*x;  
fplot( g, [-10, 10] )
```



### Exercise 1.9

```
syms s t  
  
f8 = @(s, t) log( sin(s) + cos(t) );  
diff( f8(s, t), t )  
diff( f8(s, t), s )
```

ans =

$-\sin(t)/(\cos(t) + \sin(s))$

ans =

$\cos(s)/(\cos(t) + \sin(s))$

### Exercise 1.10

$y = -\cos(t) + C$

```
dsolve( 'Dy=sin(t)' );
```

$4 - \cos(t)$

### Exercise 1.11

```
dsolve( 'Dy=sin(t) * log(y * t) * (asin(y / t))', 'y(0)=3' );
```

Warning: Unable to find symbolic solution.