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Math 20D C01

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Exercise 1.1

a. Each MATLAB homework is due at 11:59pm on the Friday of weeks 2, 4, 6 and 8.
b. The MATLAB quiz will be available from 0:00 am PT on Wednesday until 11”50 pm PT on Thursday, December 1st.
c. In the “Quizzes” section on Canvas.
d. Make-up quizzes will not be offered.
e. Done.

Exercise 1.2

Because natural log is denoted as the function “log” in MATLAB, we can type in: log(10)/log(2) to get our answer of 3.3219.

```
>> log(10)/log(2)

ans =

    3.3219
```

Exercise 1.3

By inputting the command, we made a vector, m, that ranged from -2 to 2 with intervals of 0.4. If we input m(3) in MATLAB, we would be given the 3rd value (or column) of our vector m which would be -1.2.

Exercise 1.4

```
 z = 73 sin(pi/2)-(25-5*exp(2+sin(pi/3))
       ↑
Invalid expression. Check for missing multiplication operator, missing or unbalanced delimiters, or other syntax error. To construct matrices, use brackets instead of parentheses.

>> z = 73*sin(pi/2)-(25-5*exp(2+sin(pi/3)))

z =

  135.8353
```

Exercise 1.5

```
>> help arcos
--- arcos not found. Showing help for acos instead. ---

 acos   Inverse cosine, result in radians.
    acos(X) is the arccosine of the elements of X.
```

The correct command for arccos is acos. So by computing acos(0.5) we get an answer of 1.047 radians.

```
>> acos(0.5)

ans =

    1.0472
```

Exercise 1.6

a.

```
>> a = 3; r = 1/2;
for i = 1:7
  geomSeq = a*r^(i-1)
end

geomSeq =

     3


geomSeq =

    1.5000


geomSeq =

    0.7500


geomSeq =

    0.3750
```

geomSeq =

0.1875

geomSeq =

0.0938

geomSeq =

0.0469

b.

```
function geomSeq(r, a)
r = 1/2;
a = 3;
for i = 1:7
   geomSequence = a*r^(i-1);
end
end
```

```
geomSeq =

    0.0469
```

c.

r = ⅓, a = 3

```
function geomSeq(r, a)
global geomSequence
geomSequence = 0;
for i = 1:7
   geomSequence(i) = a*r^(i-1);
end
end
```

Output from global geomSequence:
Columns 1 through 6

3.000000000000000 1.000000000000000 0.333333333333333 0.111111111111111 0.037037037037037 0.012345679012346

Column 7

0.004115226337449

Exercise 1.7

```
function mysum(r, n)
global seriessum
seriessum = 1;
for i = 2:1:(n+1)
   seriessum(i) = seriessum(i-1) + 1/(r^(i-1));
end
end
```

seriessum =

Columns 1 through 6

1.000000000000000 1.200000000000000 1.240000000000000 1.248000000000000 1.249600000000000 1.249920000000000

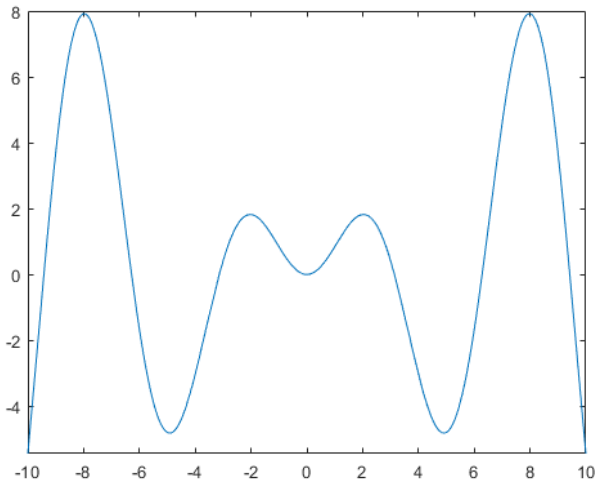
Columns 7 through 11

1.249984000000000 1.249996800000000 1.249999360000000 1.249999872000000 1.249999974400000

As can be seen from the last column, the series approaches 1.25.

Exercise 1.8

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



Exercise 1.9
With respect to t:

```
>> syms s t

diff(log(3-sin(s)+cos(t)), t)

ans =

-sin(t)/(cos(t) - sin(s) + 3)
```

With respect to s:

```
>> syms s t

diff(log(3-sin(s)+cos(t)), s)

ans =

-cos(s)/(cos(t) - sin(s) + 3)
```

Exercise 1.10

a. y =C -cos(t)
b. dsolve('Dy=sin(t)', 't')
   ans = C1 - cos(t)
c. dsolve('Dy=sin(t)', 'y(0)=1')
   ans = 6 - cos(t)

Exercise 1.11

```
dsolve('Dy=acos(y*t)*sqrt(t/y)')
Warning: Unable to find explicit solution.
```