MLA – 001

a = 3;
b = -2;
c = 0:2:8;
d = 3:3:15;

Case	MATLAB Statement	MATLAB Output Dimensions	MATLAB Output
A	a < 3	1x1	0
B	a >= b	1x1	1
C	(a < b) && (b >= 2)	1x1	0
D	(a-b) <= 0	1x1	0
E	a ~= b	1x1	1
F	a = b	1x1	-2
G	c <= b	1x5	[0 0 0 0 0]
H	c ~= d	1x5	[1 1 1 1 1]
I	d > [a b]	N/A	N/A
J	c < (d-2*a)	1x5	[0 0 0 0 1]
K	(a == 3) && (d<2)	N/A	N/A
L	(a~=0) | (c==d)	1x5	[1 1 1 1 1]
M	((a < b) | (b <3)) && (b~= -1)	1x1	1
N	(~(c-d < 0)) | (c>a)	1x5	[0 0 1 1 1]
O	~((~(a~=b)) & (d./c > 1))	1x5	[1 1 1 1 1]

MLA – 002

```
% set constants
e = exp(1);
eneg1 = e^-1;
lowerlim = eneg1-.0001;
upperlim = eneg1+.0001;
n = 0;
a = 0;
%find experimental value of e and n
while (a < lowerlim) || (a > upperlim)
    a = (1 - (1/n))^n;
  n = n + .0001;
end
fprintf ("e^-1 experimental = %f",a)
fprintf ("n = %f",n)
```

```
e^-1 experimental = 0.367800
n = 0.399000
```

MLA – 003

```
% Reset from experiment 1
clc;
clear;
%Import Required
load("ME2004_VoltageData.mat");
%Find Peak & Peak Time
[peak ,peaktimeindx] = max (V);
peaktime = t(peaktimeindx);
% Find Overshoot %
endvalueV = V(end);
endvaluet = t(end);
overshoot = (((peak/endvalueV)-1)*100);
%Find Rise Time
Vbeforepeak = V(1:peaktimeindx);
percent90 = endvalueV*.9;
percent10 = endvalueV*.1;
risingvalues = (Vbeforepeak <= percent90) & (Vbeforepeak >= percent10);
Vrising = Vbeforepeak(risingvalues);
[risestart,timestart] = min(Vrising);
[riseend,timeend] = max(Vrising);
risetimeidx = timeend-timestart;
risetime =t(risetimeidx);
%Find Settling Time
Vafter = V(peaktimeindx:end);
topbound = endvalueV*1.02;
botbound = endvalueV*.98;
outsidebounds = ((Vafter >= topbound) | (Vafter<=botbound));
lastoutside = find(outsidebounds,1,"last");
settlingidx = lastoutside;
settlingtime = t(settlingidx);
%Find Settling Max
settleingmax = peak;
%Find Settling Min
V2 = V(t >=1.44);
[smin , smintime] = min (V2);
settlingmin = smin;
%Display Required Values
fprintf ("Peak = %f",peak)
fprintf ("Peak Time = %f",peaktime)
fprintf ("Overshoot Percentage = %f",overshoot)
fprintf ("Rise Time = %f",risetime)
```

```
fprintf ("Settling Time = %f",settlingtime)
fprintf ("Settling Min = %f",settlingmin)
fprintf ("Settling Max = %f",settleingmax)
```

```
Peak = 0.297279
Peak Time = 1.440000
Overshoot Percentage = 48.681365
Rise Time = 0.530000
Settling Time = 6.120000
Settling Min = 0.152685
Settling Max = 0.297279
```

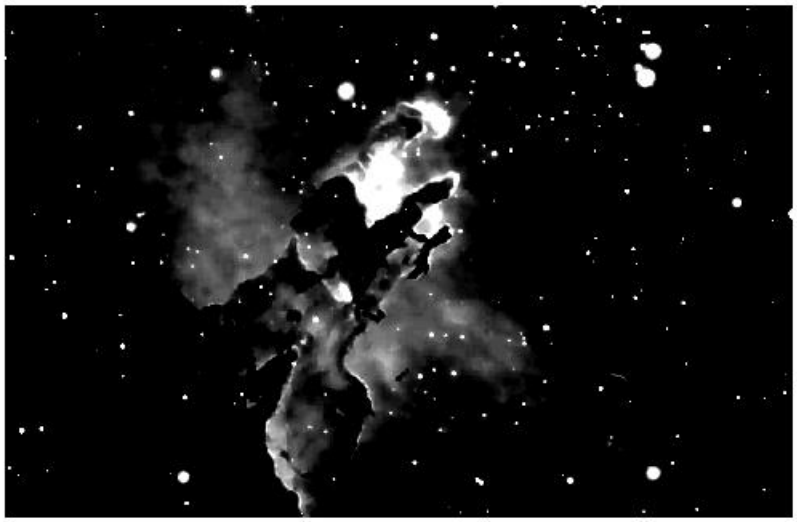
MLA – 013

```
%Reset from experiments 1 and 2
clc;
clear;
%Import Required
load("ME2004Image.mat")
%Find dimensions of img matrix
intermediate1 = image(end, :);
intermediate2 = image(:,end);
dimensioncolumns = length(intermediate1);
dimensionrows = length(intermediate2);
%Display img
imshow(image)
%Display Original Dimensions
fprintf ("The Original Image is %i by %i pixels",dimensionrows,dimensioncolumns)
%Strech image first time
minIntensityRange = 75;
maxIntensityRange = 180;
image = (image -minIntensityRange) * (255/(maxIntensityRange -
minIntensityRange));
%Display Streched Image
fprintf("Below image is the first modified version of the original")
imshow(image)
%Strech image for showing brightest values
minIntensityRange = 180;
maxIntensityRange = 255;
image = (image -minIntensityRange) * (255/(maxIntensityRange -
minIntensityRange));
%Display Streched Image
fprintf("Below image is the second modified version of the original")
imshow(image)
%Strech image for showing darkest values
minIntensityRange = 0;
```

```
maxIntensityRange = 75;
image = (image -minIntensityRange) * (255/(maxIntensityRange -
minIntensityRange));
%Display Streched Image
fprintf("Below image is the third modified version of the original")
imshow(image)
```

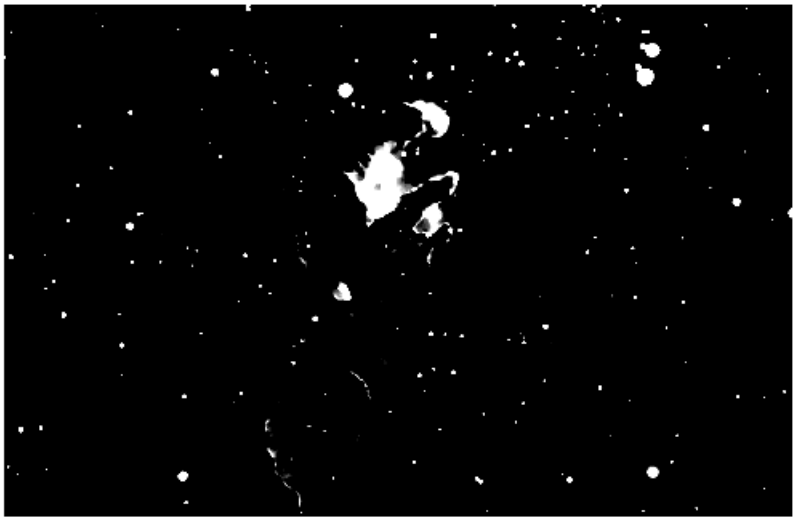


```
The Original Image is 859 by 1325 pixels
Below image is the first modified version of the original
```



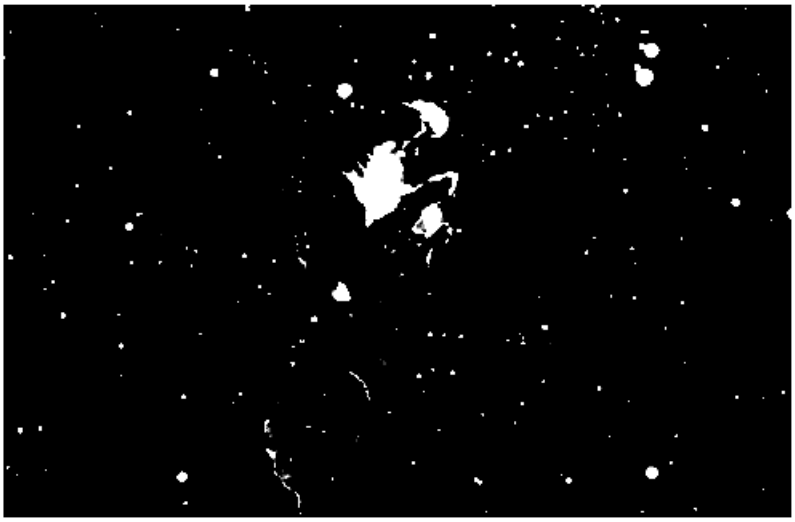
To my eye the second image is not in any way better than the first at showing parts of the image. Given the values input I would have expected it to better show the middle range of brightness values while removing all other information but instead it kind of just oversaturated the majority of the image.

```
Below image is the second modified version of the original
```



Above is the 3rd image highlighting the bright areas

```
Below image is the third modified version of the original
```



Above is the 4th image highlighting the dark areas. I don't think this one worked as intended but given the values put into the function I would have expected more white on the image.