Chander Bottomley
EE111 Lab 2

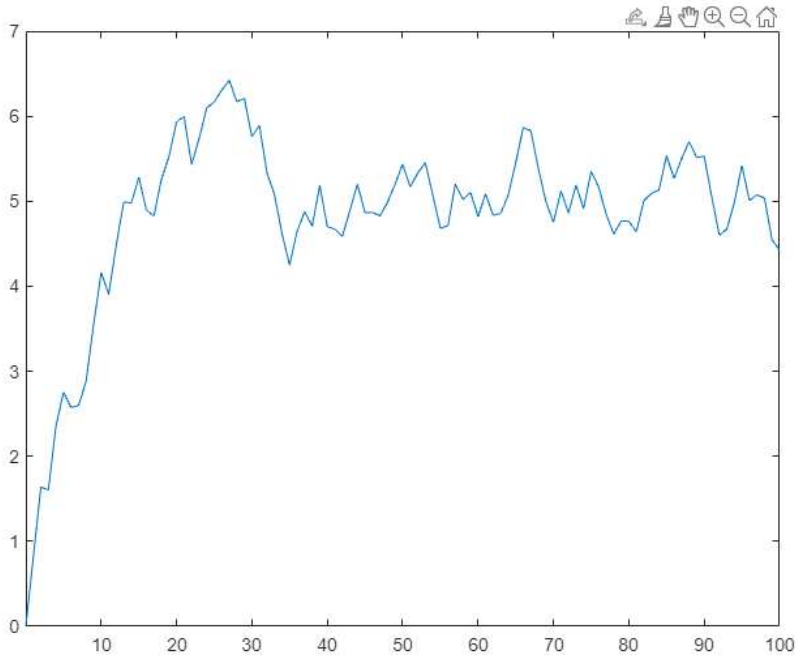
Task 1)

a)

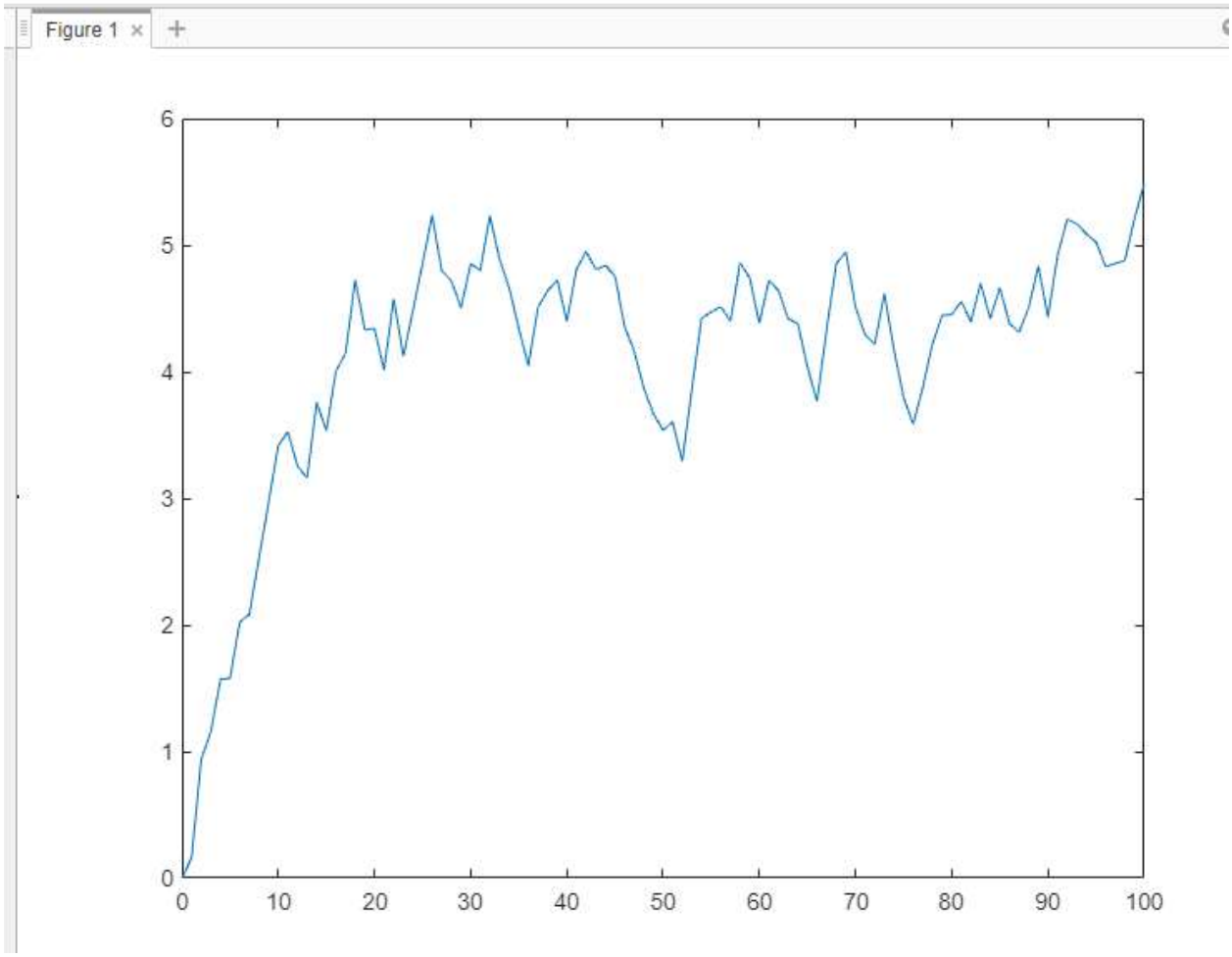
lab1.m | lab2.m

```
ind_x = 0:99;
x = rand(1, length(ind_x));
ind_h = 1:99;
h = 0.9.^(ind_h-1);
h = [0, h];
x = [x, zeros(1,200)];
h = [h, zeros(1,200)];
for i = 0:100
 t1 = x(1:i+1);
 t2 = h(1:i+1);
 t2 = fliplr(t2);
 t3 = t1 .* t2;
 y(i+1) = sum(t3);
end
ind_y = 0:100;
plot(ind_y,y)
```

Figure 1



```
ind_x = 0:99;
x = rand(1, length(ind_x));
ind_h = 1:99;
h = 0.9.^(ind_h-1);
h = [0, h];
x = [x, zeros(1,200)];
h = [h, zeros(1,200)];
for i = 0:100
 t1 = x(1:i+1);
 t2 = h(1:i+1);
 t2 = fliplr(t2);
 t3 = t1 .* t2;
 y(i+1) = sum(t3);
end
ind_y = 0:100;
yy = conv(x,h);
plot(ind_y, yy(1:length(ind_y)))
```

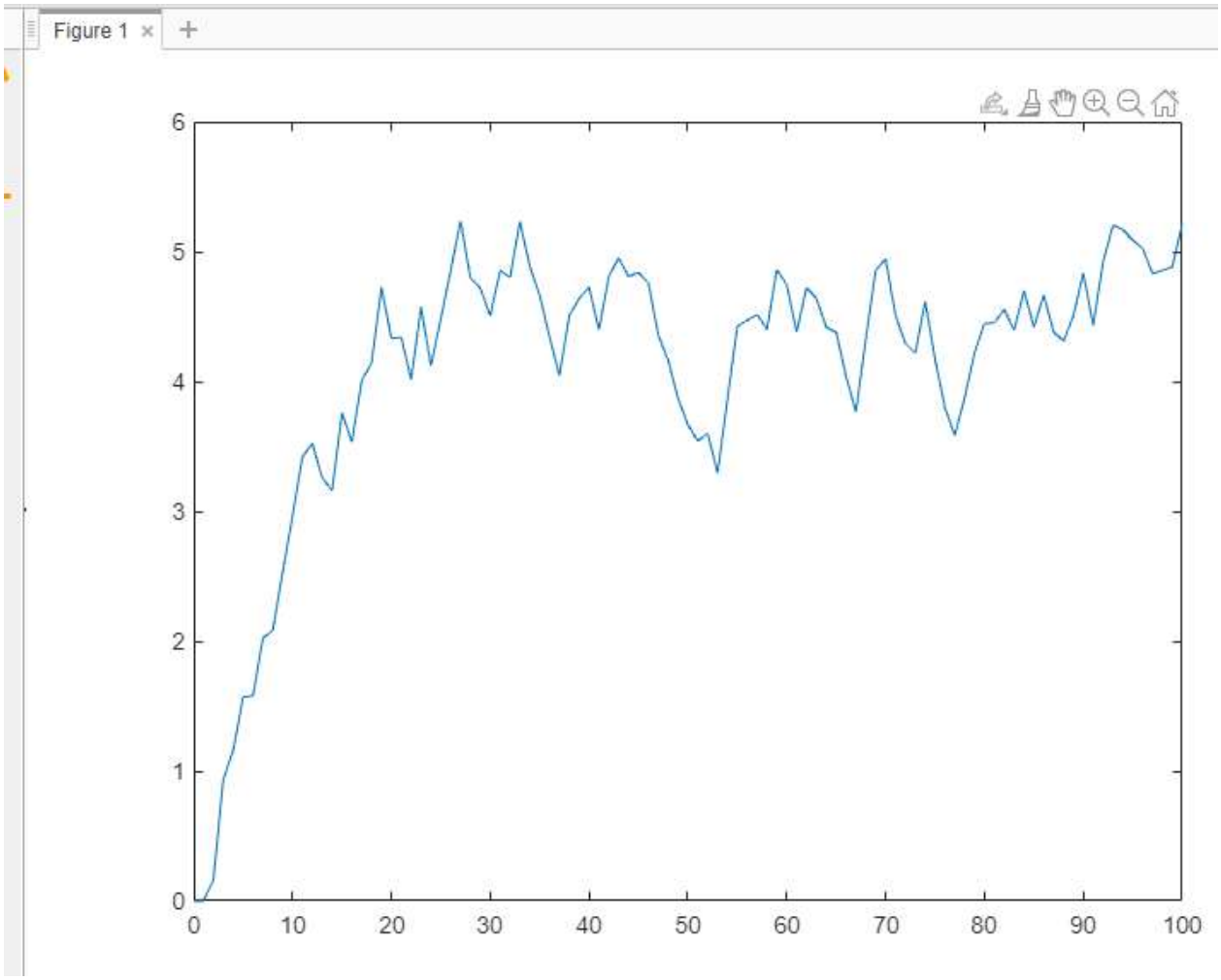


b)

lab1.m | lab2.m | lab21b.m | lab22a.m

```
ind_x = 0:99;
x = rand(1, length(ind_x));
ind_h = 1:99;
h = 0.9.^(ind_h-1);
h = [0, h];
x = [x, zeros(1,200)];
h = [h, zeros(1,200)];
for i = 0:100
 t1 = x(1:i+1);
 t2 = h(1:i+1);
 t2 = fliplr(t2);
 t3 = t1 .* t2;
 y(i+1) = sum(t3);
end
ind_y = 0:100;
y2(1) = 0;
x = [0 x];
for i = 0:100
 y2(i+2) = 0.9 * y2(i+1) + x(i+1);
end
y2 = y2(2:end);
n = 0:100;
plot(n,y2)

```



c) These two graphs are the same

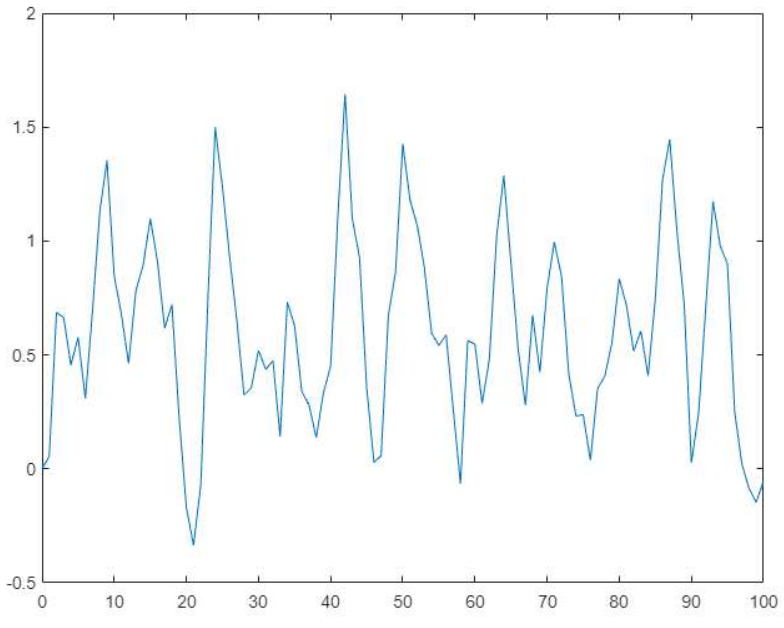
Task 2:

a)

lab1.m | lab2.m | lab21b.m | lab22a.m

```
ind_x = 0:99;
x = rand(1, length(ind_x));
ind_h = 1:99;
h = 0.9.^(ind_h - 1) .* cos((pi/5) * ind_h-1);
h = [0, h];
x = [x, zeros(1,200)];
h = [h, zeros(1,200)];
for i = 0:100
 temp1 = x(1:i+1);
 temp2 = h(1:i+1);
 temp2 = fliplr(temp2);
 temp3 = temp1 .* temp2;
 y(i+1) = sum(temp3);
end
ind_y = 0:100;
plot(ind_y,y)
```

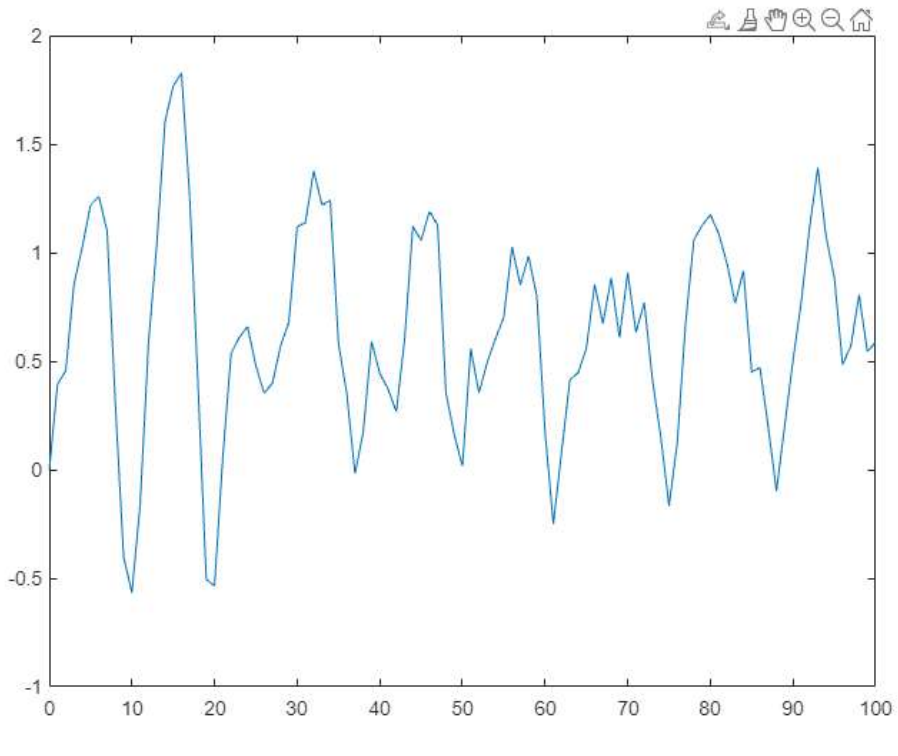
Figure 1



lab1.m | lab2.m | lab21b.m | lab22a.m

```
ind_x = 0:99;
x = rand(1, length(ind_x));
ind_h = 1:99;
h = 0.9.^(ind_h - 1) .* cos((pi/5) * ind_h-1);
h = [0, h];
x = [x, zeros(1,200)];
h = [h, zeros(1,200)];
for i = 0:100
 temp1 = x(1:i+1);
 temp2 = h(1:i+1);
 temp2 = fliplr(temp2);
 temp3 = temp1 .* temp2;
 y(i+1) = sum(temp3);
end
ind_y = 0:100;
yy = conv(x,h);
plot(ind_y, yy(1:length(ind_y)))
```

Figure 1

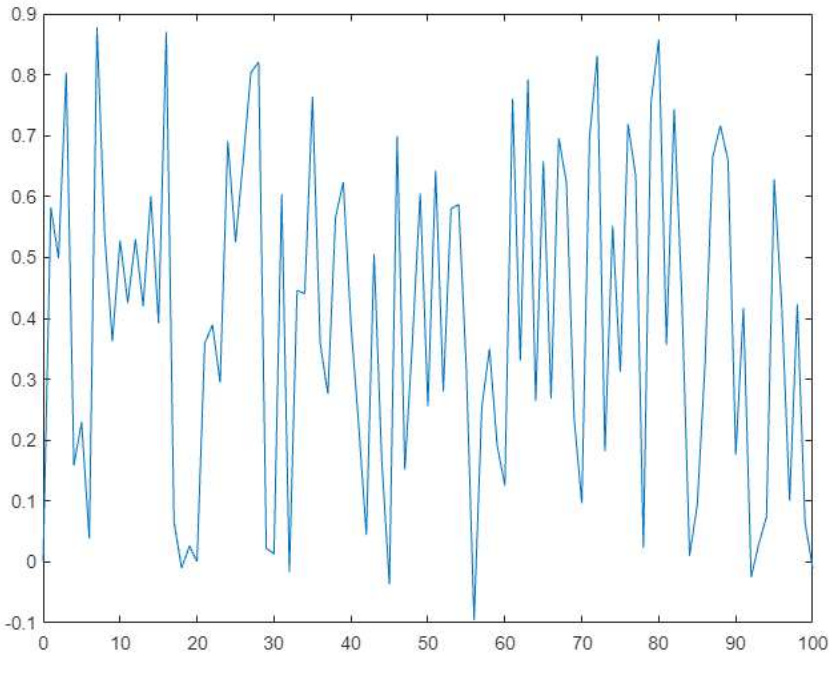


b)

lab1.m | lab2.m | lab21b.m | lab22a.m

```
ind_x = 0:99;
x = rand(1, length(ind_x));
ind_h = 1:99;
h = 0.9.^(ind_h - 1) .* cos((pi/5) * ind_h-1);
h = [0, h];
x = [x, zeros(1,200)];
h = [h, zeros(1,200)];
for i = 0:100
 temp1 = x(1:i+1);
 temp2 = h(1:i+1);
 temp2 = fliplr(temp2);
 temp3 = temp1 .* temp2;
 y(i+1) = sum(temp3);
end
ind_y = 0:100;
%yy = conv(x,h);
y3(1) = 0;
y3(2) = 0;
x = [0, 0, x];
for i = 0:100
 y3(i+3) = 1.8 * cos(pi/5) * y3(i+2) - 0.8 * y3(i+2) + x(i+2) - 0.9 * cos(pi/5) * x(i+1);
end
y3 = y3(3:end);
n = 0:100;
plot(n,y3)
```

Figure 1



c) these two graphs are different