

## Task a:

### Code:

```
t = -10:0.1:10;
y1 = zeros(size(t));
y2 = zeros(size(t));

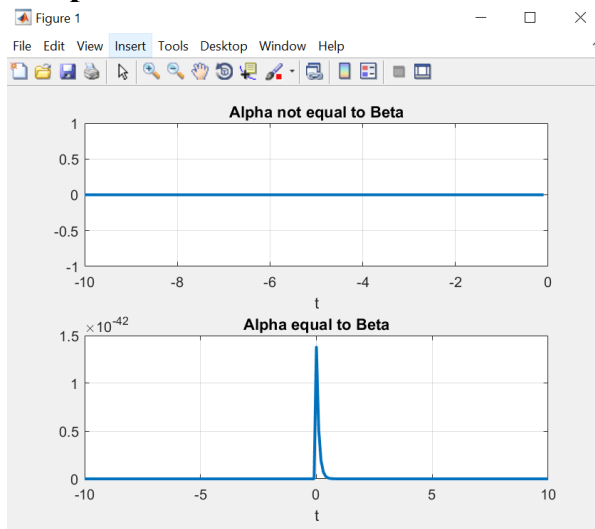
for i = 1:length(t)
    if t(i) < 0
        y1(i) = 0;
    elseif t(i) >= 0
        y1(i) = (exp(-b*i)/(b-a))*(exp(i*(b-a))-1);
    end
end

for i = 1:length(t)
    if t(i) < 0
        y2(i) = 0;
    elseif t(i) >= 0
        y2(i) = i*exp(-b*i);
    end
end

subplot(2,1,1);
plot(t, y1, 'LineWidth', 2);
xlabel('t');
ylabel('x');
title('Alpha not equal to Beta');
grid on;

subplot(2,1,2);
plot(t, y2, 'LineWidth', 2);
xlabel('t');
ylabel('h');
title('Alpha equal to Beta');
grid on;
```

## Output:



## Task b:

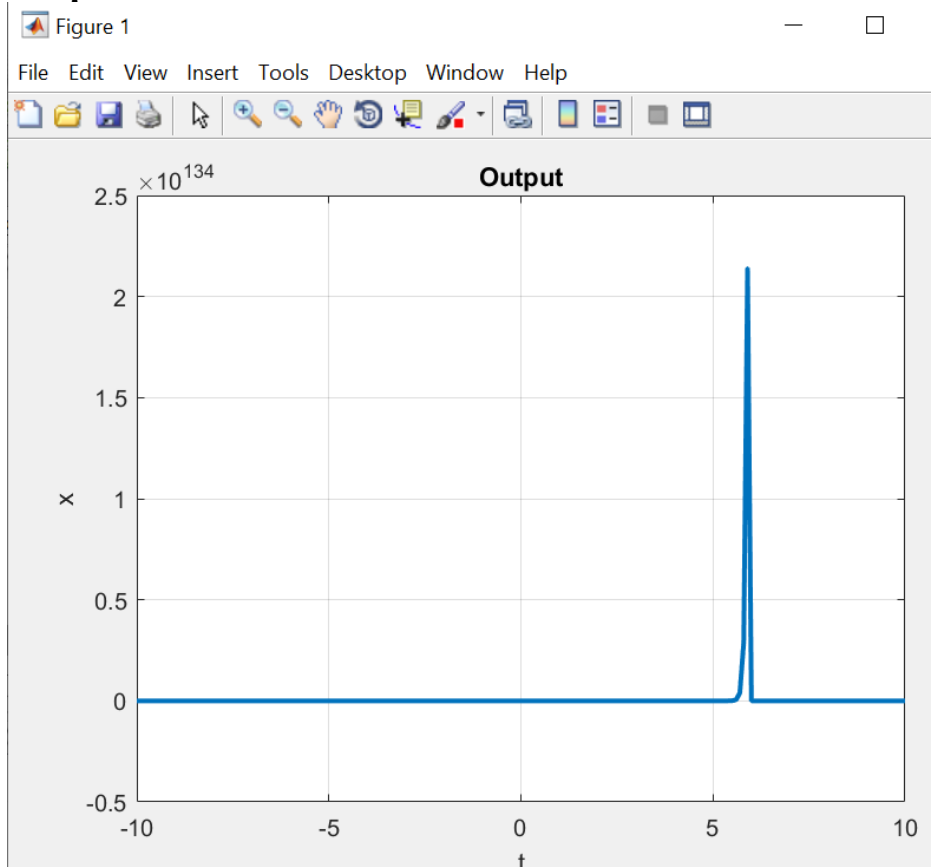
### Code:

```
t = -10:0.1:10;
y1 = zeros(size(t)); % Initialize y with zeros

for i = 1:length(t)
    if t(i) < 1
        y1(i) = exp(2*i) * (-exp(-4) + 0.5 + 0.5*exp(-10));
    elseif t(i) >= 1 && t(i) < 3
        y1(i) = -exp(2*(i-2))-exp(-2)+ 0.5 + 0.5*exp(2*(i-5));
    elseif t(i) >= 3 && t(i) < 6
        y1(i) = 0.5*(exp(2*i-10)-exp(2));
    else
        y1(i)=0;
    end
end

plot(t, y1, 'LineWidth', 2);
xlabel('t');
ylabel('x');
title('Output');
grid on;
```

### Output:



## Task c:

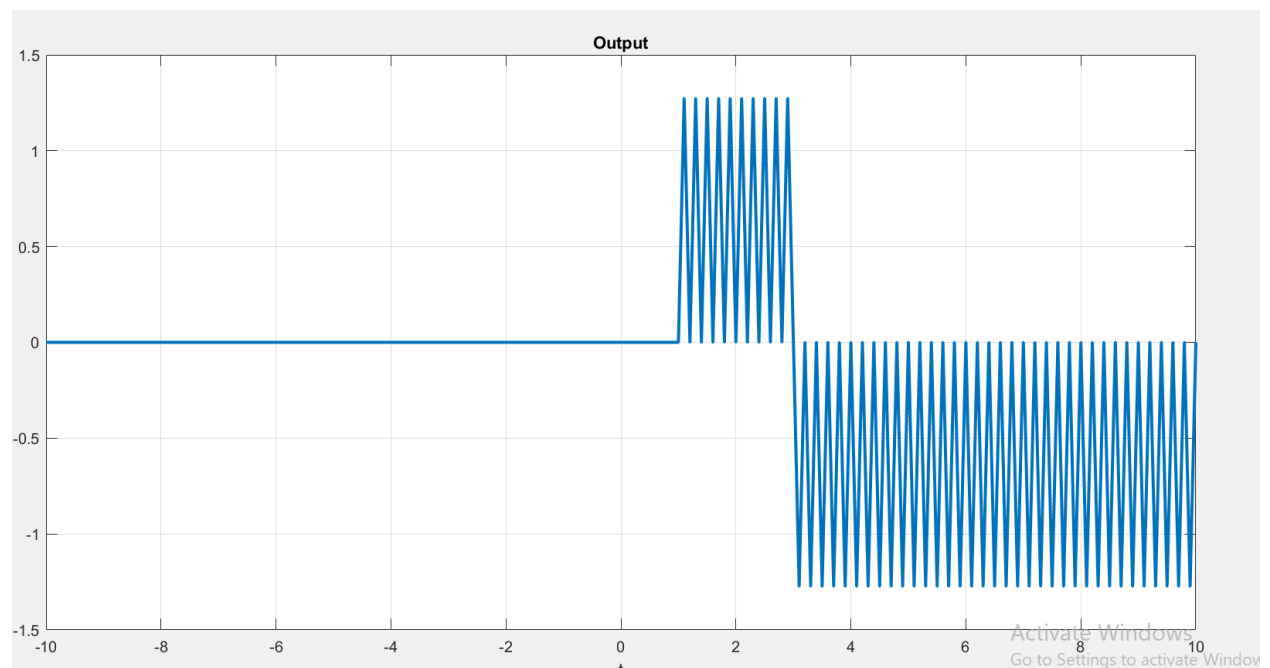
### Code:

```
t = -10:0.1:10;
y1 = zeros(size(t));

for i = 1:length(t)
    if t(i) < 1
        y1(i) = 0;
    elseif t(i) >= 1 && t(i) < 3
        y1(i) = (2/pi)*(cos(pi*i)+1);
    else
        y1(i) = (-2/pi)*(cos(pi*i)+1);
    end
end

plot(t, y1, 'LineWidth', 2);
xlabel('t');
ylabel('x');
title('Output');
grid on;
```

### Output:

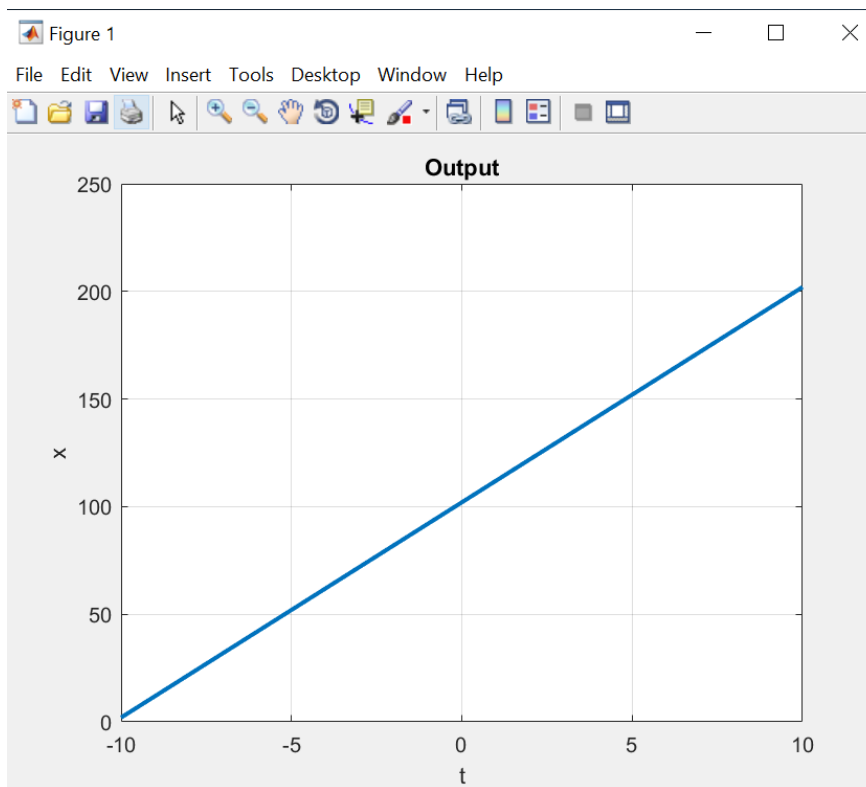


## Task d:

### Code:

```
t = -10:0.1:10;  
y1 = zeros(size(t));  
a = 1;  
b = 1;  
  
for i = 1:length(t)  
    y1(i) = a*i+b;  
end  
  
plot(t, y1, 'LineWidth', 2);  
xlabel('t');  
ylabel('x');  
title('Output');  
grid on;
```

### Output:



## Task e:

### Code:

```
t = -10:0.1:10;
y1 = zeros(size(t));
for i = 1:length(t)
    if t(i) > 0.5 && t(i) < 1.5
        y1(i) = (-i + 2.5).^2 - 0.5;
    elseif t(i) >= 1.5 && t(i) < 2.5
        y1(i) = 0.5 - (-i + 2.5).^2;
    elseif t(i) >= 2.5 && t(i) < 3.5
        y1(i) = -0.5 + (-i + 3.5).^2;
    elseif t(i) >= 3.5 && t(i) < 4.5
        y1(i) = 0.5 - (-i + 4.5).^2;
    elseif t(i) >= 4.5 && t(i) < 5.5
        y1(i) = -0.5 + (-i + 5.5).^2;
    elseif t(i) >= 5.5 && t(i) < 6.5
        y1(i) = 0.5 - (-i + 6.5).^2;
    elseif t(i) >= 6.5 && t(i) < 7.5
        y1(i) = -0.5 + (-i + 7.5).^2;
    else
        y1(i) = 0;
    end
end
```

```
plot(t, y1, 'LineWidth', 2);
xlabel('t');
ylabel('x');
title('Output');
grid on;
```

### Output:

