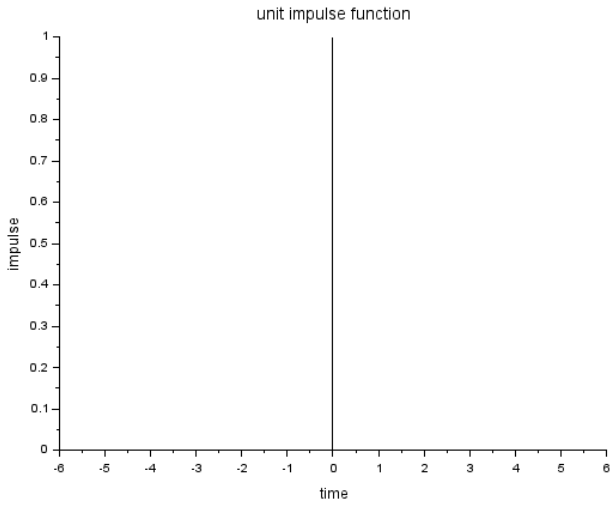
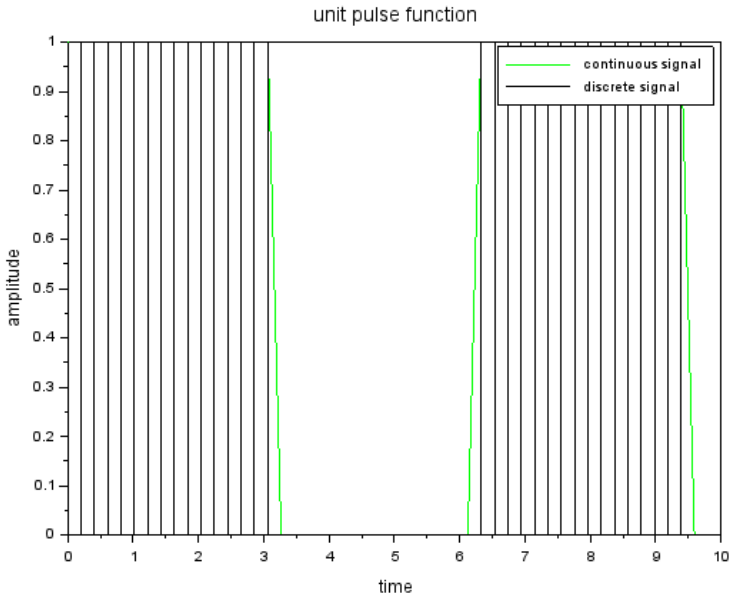
1. Unit impulse function

```
l = 5;
n = -l:l;
x = [zeros(1,l),ones(1,1),zeros(1,l)];
plot2d3(n,x);
xlabel("time");
ylabel("impulse");
title("unit impulse function");
a = gca();
a.x_location("origin");
a.y_location("origin");
```



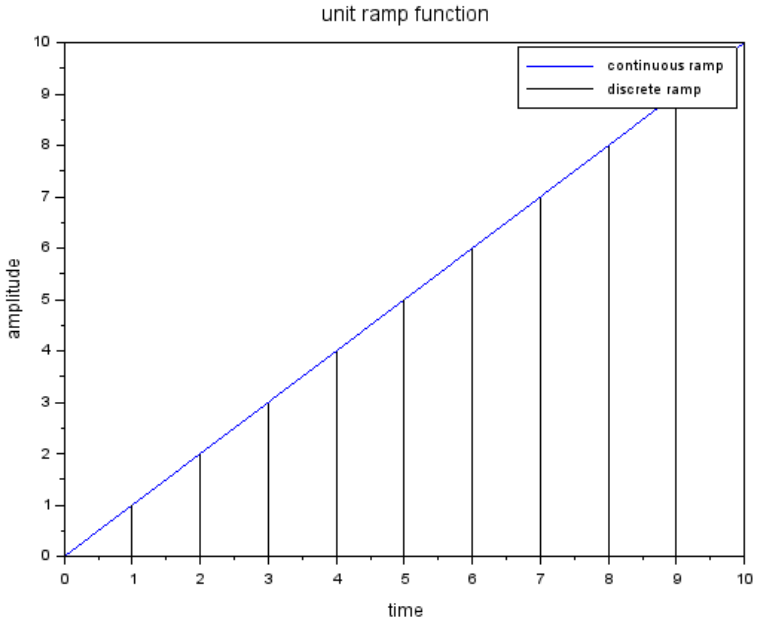
2. Unit pulse function

```
n = linspace(0,10,50);
unit_pulse = sqrt(squarewave(n));
plot(n, unit_pulse, color = "green");
plot2d3(n, unit_pulse);
xlabel('time');
ylabel('amplitude');
title('unit pulse function');
legend("continuous signal", "discrete signal");
```



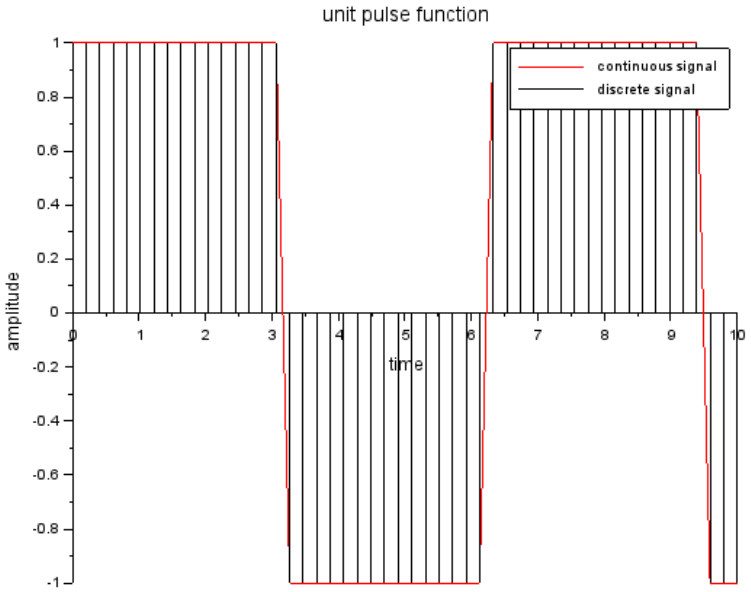
3. Unit ramp function

```
n = 0:10;
x = n;
plot(n,x,color = "blue");
plot2d3(n,x);
xlabel("time");
ylabel("amplitude");
title("unit ramp function");
legend("continuous ramp", "discrete ramp");
```



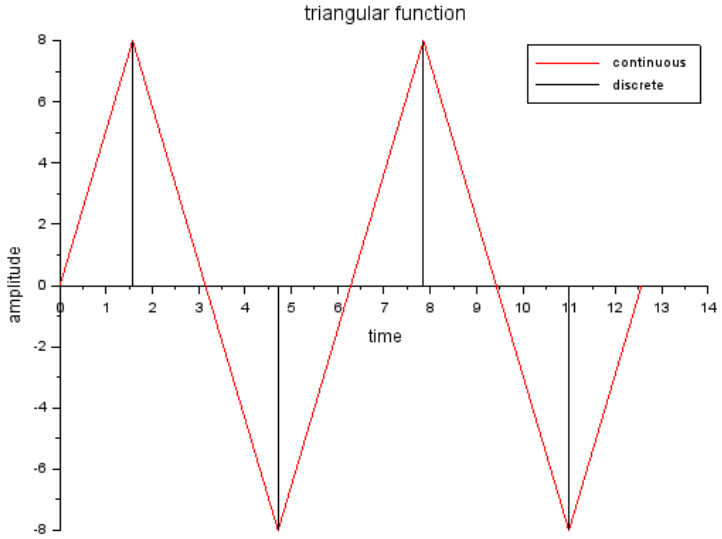
4. Bipolar function

```
n = linspace(0,10,50);
bipolar = squarewave(n);
a = gca()
a.x_location="origin";
plot(n, bipolar, color = "red");
plot2d3(n, bipolar);
xlabel('time');
ylabel('amplitude');
title('unit pulse function');
legend("continuous signal", "discrete signal");
```



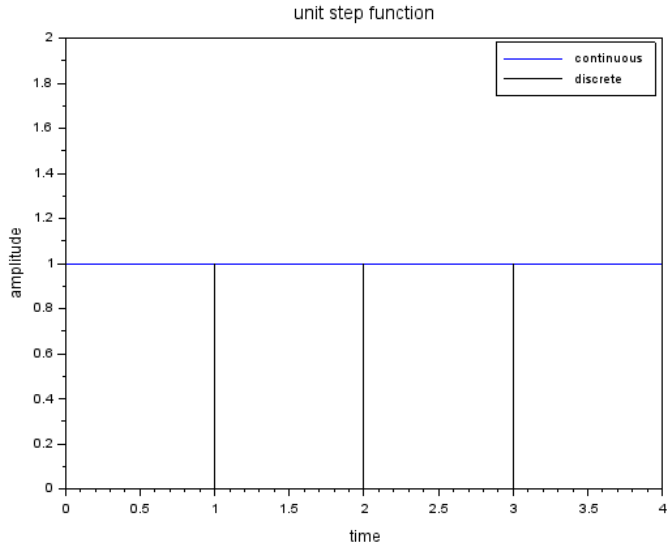
5. Triangular function

```
a = 8;
t = 0:(%pi/2):(4*%pi);
b = gca()
b.x_location="origin";
y = a*sin(t);
plot(t,y, color = "red");
plot2d3(t,y);
xlabel("time");
ylabel("amplitude");
title("triangular function");
legend("continuous", "discrete");
```



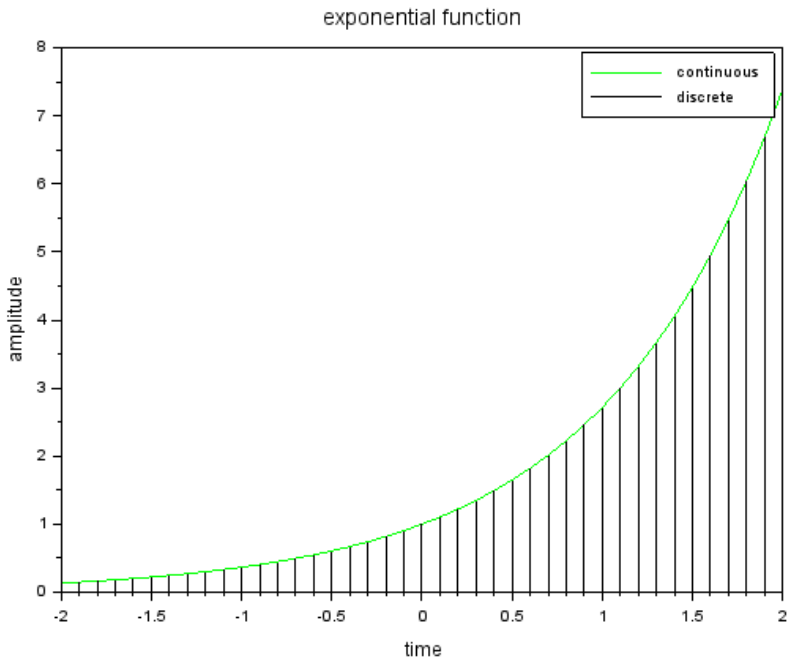
6. Unit step function

```
t = 0:4;
y = ones(1,5);
plot(t,y, color = "blue");
plot2d3(t,y);
xlabel("time");
ylabel("amplitude");
title("unit step function");
legend("continuous", "discrete");
```



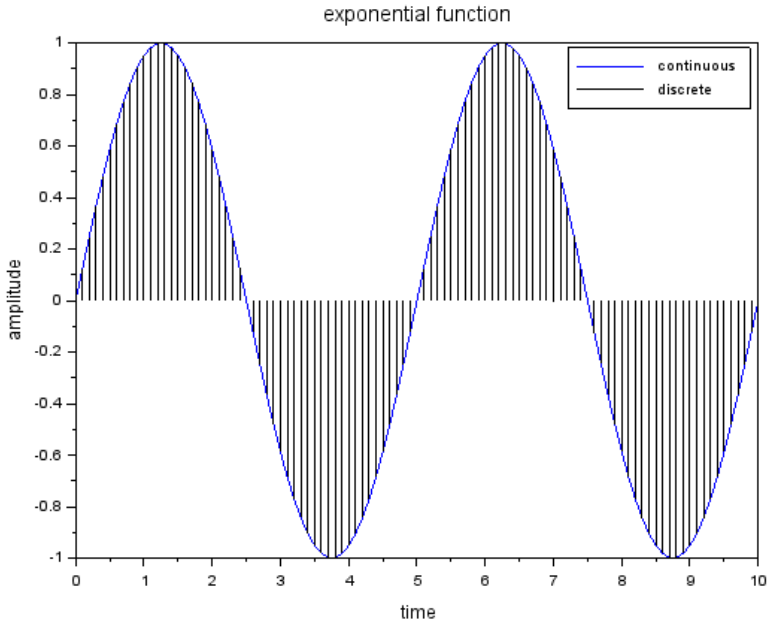
7. Exponential function

```
t = -2:0.1:2;
x = exp(t);
plot(t,x, color = "green");
plot2d3(t,x);
xlabel("time");
ylabel("amplitude");
title("exponential function");
legend("continuous","discrete");
```



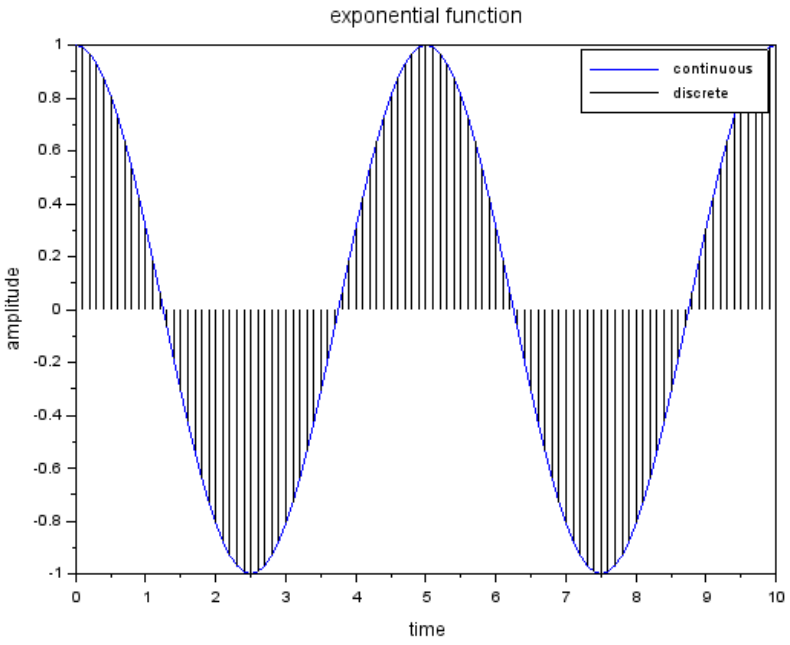
8. Sine wave

```
f = 0.2;
t = 0:0.1:10;
x = sin(2*%pi*f*t);
plot(t,x,color = "blue");
plot2d3(t,x);
xlabel("time");
ylabel("amplitude");
title("exponential function");
legend("continuous","discrete");
```



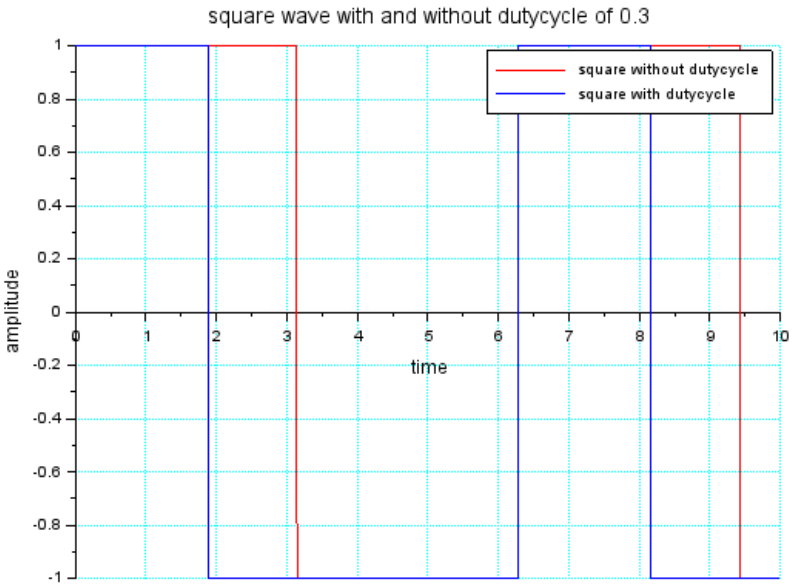
9. Cosine wave

```
f = 0.2;
t = 0:0.1:10;
x = cos(2*%pi*f*t);
plot(t,x,color = "blue");
plot2d3(t,x);
xlabel("time");
ylabel("amplitude");
title("exponential function");
legend("continuous","discrete");
```



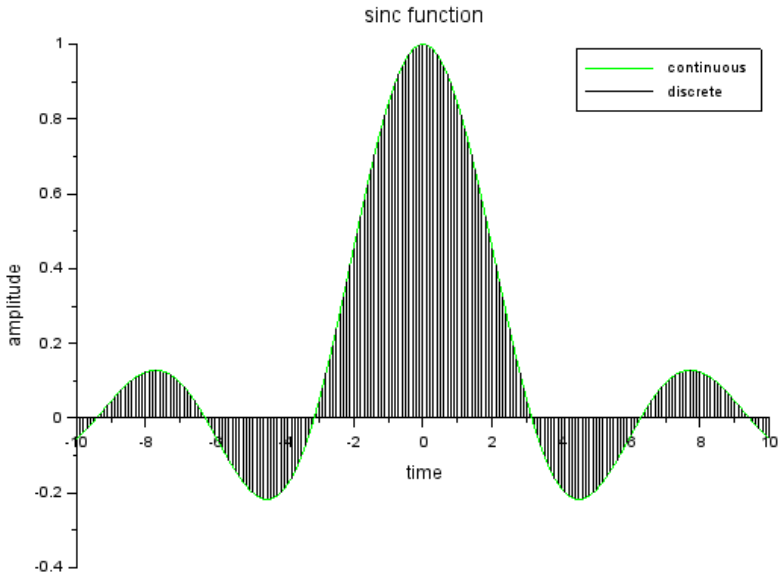
10. Square wave with and without duty cycle

```
t = linspace(0,10,1000);
u = squarewave(t);
v = squarewave(t,30);
a = gca()
a.x_location="origin";
xgrid(4,1,7);
plot(t,u, color = "red");
plot(t,v, color = "blue");
title("square wave with and without dutycycle of 0.3");
xlabel("time");
ylabel("amplitude");
legend("square without dutycycle", "square with dutycycle");
```



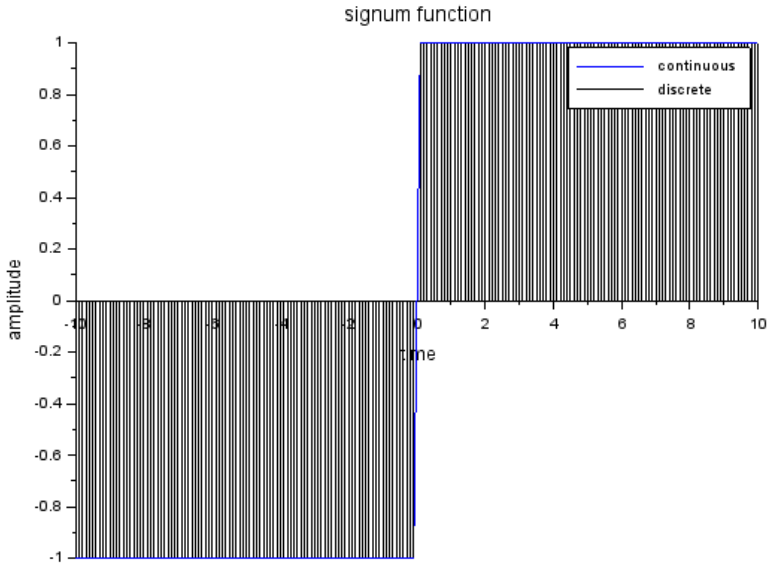
11. Sinc function

```
t = -10:0.1:10;
x = sinc(t);
a = gca()
a.x_location="origin";
plot(t,x , color = "green");
plot2d3(t,x);
title("sinc function");
xlabel("time");
ylabel("amplitude");
legend("continuous", "discrete");
```



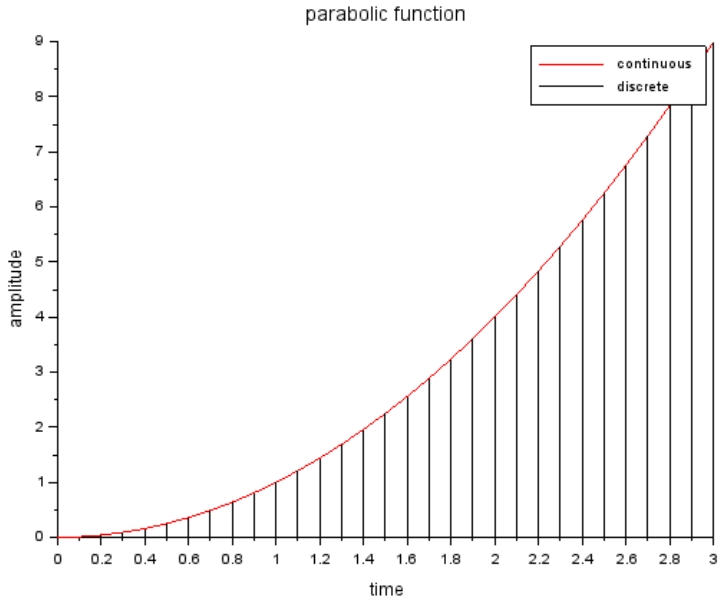
12. Sigum function

```
t = -10:0.1:10;
x = sign(t);
a = gca()
a.x_location="origin";
plot(t,x , color = "blue");
plot2d3(t,x);
title("signum function");
xlabel("time");
ylabel("amplitude");
legend("continuous", "discrete");
```



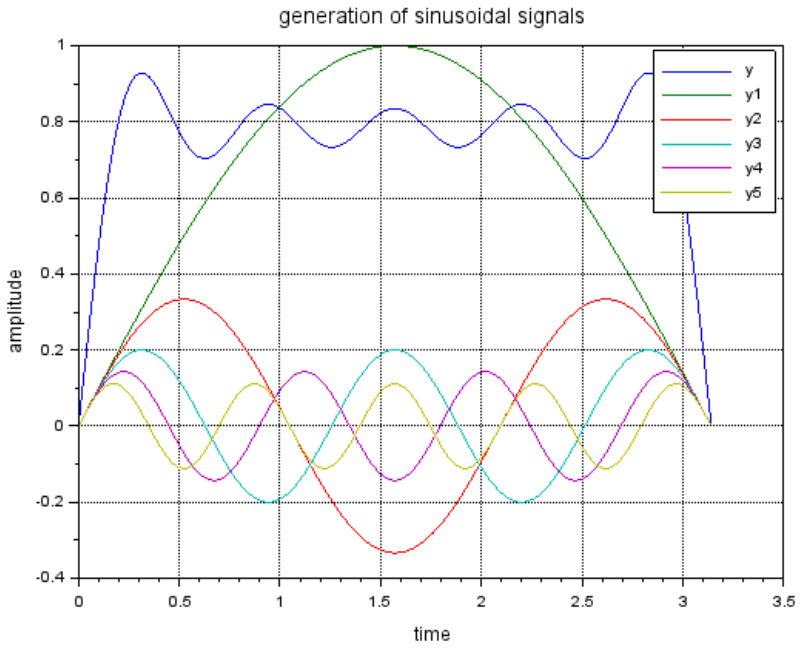
13. Parabola function

```
t = 0:0.1:3;
x = t^2;
a = gca()
a.x_location="origin";
plot(t,x, color = "red");
plot2d3(t,x);
title("parabolic function");
xlabel("time");
ylabel("amplitude");
legend("continuous", "discrete");
```



14. Sint + sin3t/3 + sin5t/5 + sin7t/7 + sin9t/9

```
t = 0:0.01:%pi;
y1 = sin(t);
y2 = sin(3*t)/3;
y3 = sin(5*t)/5;
y4 = sin(7*t)/7;
y5 = sin(9*t)/9;
y = y1+y2+y3+y4+y5;
plot(t,y,t,y1,t,y2,t,y3,t,y4,t,y5);
legend('y', 'y1','y2','y3','y4','y5');
title("generation of sinusoidal signals");
xgrid(1);
xlabel("time");
ylabel("amplitude");
```


generation of sinusoidal signals
amplitude
time
y
y1
y2
y3
y4
y5
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0
0.5
1
1.5
2
2.5
3
3.5