```matlab
clc
clear
close all
format compact

Box.x = 5;
Box.y = 5;
Box.phi = pi/4;
Box.radius = 1;
Box.width = 2;
Box.length = 1;

Wheel.radius = .25;
Wheel.wheel_width = 0.25;

drawRobot(Box, Wheel);

sample_length = 100;
circle_radius = 3;

x_vals = circle_radius * cos(linspace(0, 2*pi, sample_length));
y_vals = circle_radius * sin(linspace(0, 2*pi, sample_length));

%figure()
Box.phi = pi/2;
% for i = 1:length(x_vals)
%     Box.x = x_vals(i);
%     Box.y = y_vals(i);
%     Box.phi = Box.phi + 2*pi/sample_length;
%     drawRobot(Box, Wheel);
%     pause(0)
%
%
% end
```
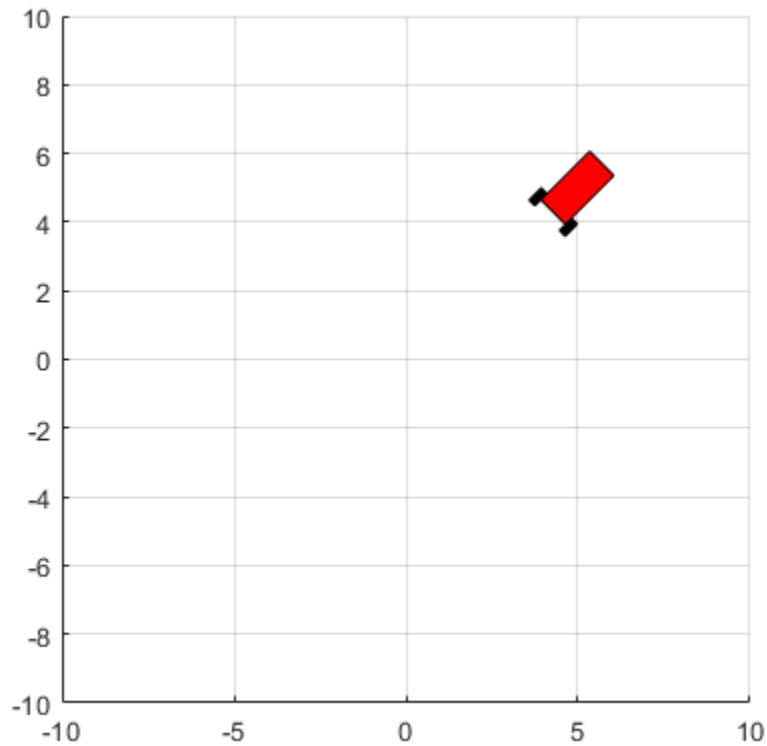
```matlab
function [] = drawRobot(Box, Wheel)

% All for main body
length = Box.length; %y-direction
width = Box.width; % x-direction

y_box = [-length/2 -length/2 length/2 length/2 -length/2];
x_box = [width/2 -width/2 -width/2 width/2 width/2];

x = Box.x;
y = Box.y;
phi = Box.phi;

rot_matrix = [cos(phi), -sin(phi); sin(phi), cos(phi)];
box_rotated = rot_matrix * [x_box; y_box];

box_translated_rotated = [box_rotated(1,:) + x; box_rotated(2,:) + y];


% Wheels
radius = Wheel.radius;
wheel_width = Wheel.wheel_width; %y direction

% Left wheel
x_left_wheel = [(-width/2 - radius), (-width/2 -radius), (-width/2 +
```

```matlab
radius), (-width/2 + radius), (-width/2 - radius)];
y_left_wheel = [(length/2 + wheel_width), (length/2), (length/2), (length/2
+ wheel_width), (length/2 + wheel_width)];

left_wheel_rotated = rot_matrix * [x_left_wheel; y_left_wheel];

left_wheel_rotated_translated = [left_wheel_rotated(1,:) + x;
left_wheel_rotated(2,:) + y];

% Right Wheel

x_right_wheel = [(-width/2 - radius), (-width/2 -radius), (-width/2 +
radius), (-width/2 + radius), (-width/2 - radius)];
y_right_wheel = [(-length/2 - wheel_width), (-length/2), (-length/2), (-
length/2 - wheel_width), (-length/2 - wheel_width)];

right_wheel_rotated = rot_matrix * [x_right_wheel; y_right_wheel];

right_wheel_rotated_translated = [right_wheel_rotated(1,:) + x;
right_wheel_rotated(2,:) + y];

%Plotting
clf
hold on


    fill(right_wheel_rotated_translated(1,:),
right_wheel_rotated_translated(2,:), 'k')
    hold on
    fill(left_wheel_rotated_translated(1,:),
left_wheel_rotated_translated(2,:), 'k')
    hold on
    fill(box_translated_rotated(1,:), box_translated_rotated(2,:), 'r');
    grid on
    axis equal
    axis([-10 10 -10 10])


end
```

Published with MATLAB® R2024a