Actividad 3.2 (Trayectorias en lazo abierto)

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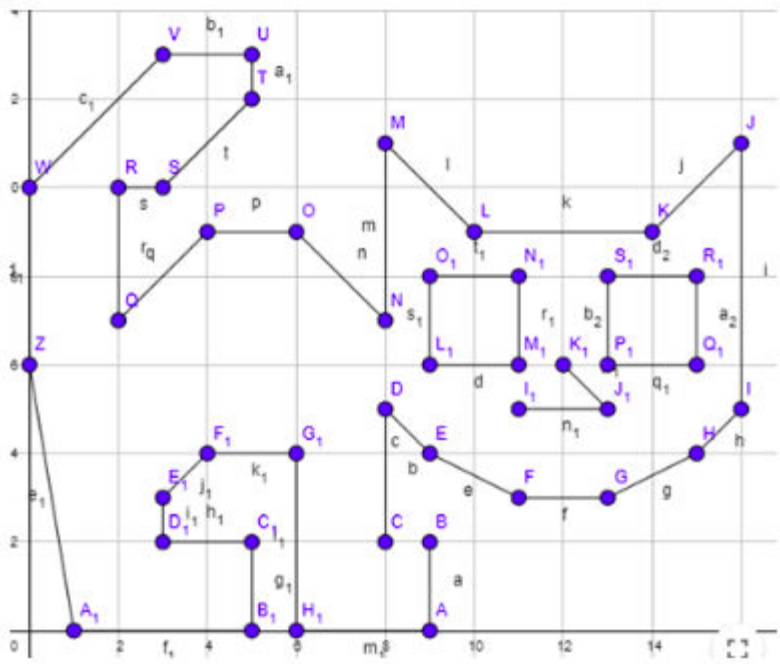
Objetivo:

Dadas ciertas figuras, replicarlas usando principios de cinematica.

Figura 1



```
%Calculo de trayectoria a partir de coordenadas,
% usamos un delta de tiempo de 1 segundo para cada paso en coordenada
coord_1_x = [9, 9, 8, 8, 9, 11, 13, 15, 16, 16, 15, 15, 13, 13, 11, 11, 9,
9, 8, 9, 9, 11, 11, 13, 13, 15, 15, 16, 16, 14, 10, 8, 8, 6, 4, 2, 2, 3, 5,
5, 3, 0, 0, 1, 5, 5, 3, 3, 4, 6, 6, 9];
coord_1_y = [0, 2, 2, 5, 4, 3, 3, 4, 5, 7, 7, 6, 6, 7, 7, 6, 6, 7, 7, 7, 8,
8, 7, 7, 8, 8, 7, 7, 11, 9, 9, 11, 7, 9, 9, 7, 10, 10, 12, 13, 13, 10, 6, 0,
0, 2, 2, 3, 4, 4, 0, 0];

%Funcion adjuntada para el calculo de velocidad lineal y angular en cada
%tramo de la trayectoria
[v, w] = setSteps(coord_1_x, coord_1_y);
```

```
%Calculo cinematico del movimiento al robot
[N, x, y, phi, hx, hy] = cinematicMobile(v, w);

% Plotting of the robot's movement using the calculated kinematics and
% coordinates
plotRobot(N, x, y, phi, hx, hy, 0, 16, 0, 13);
```

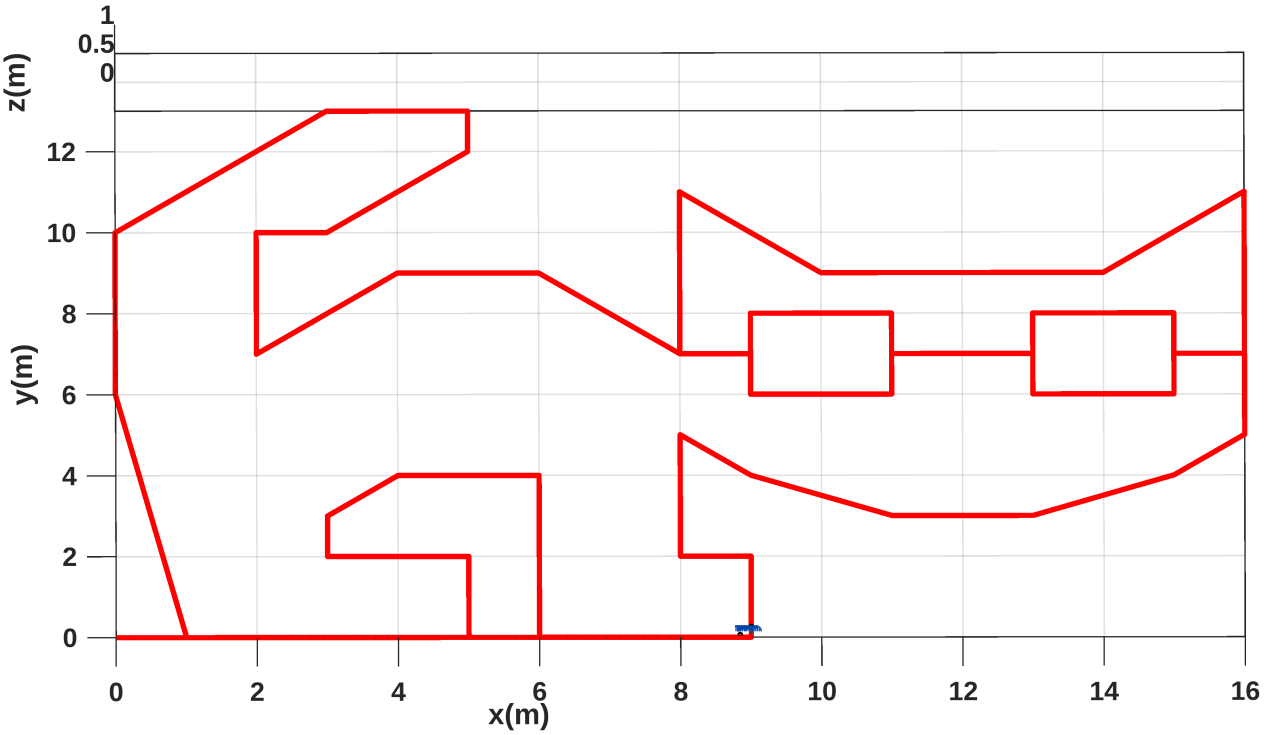
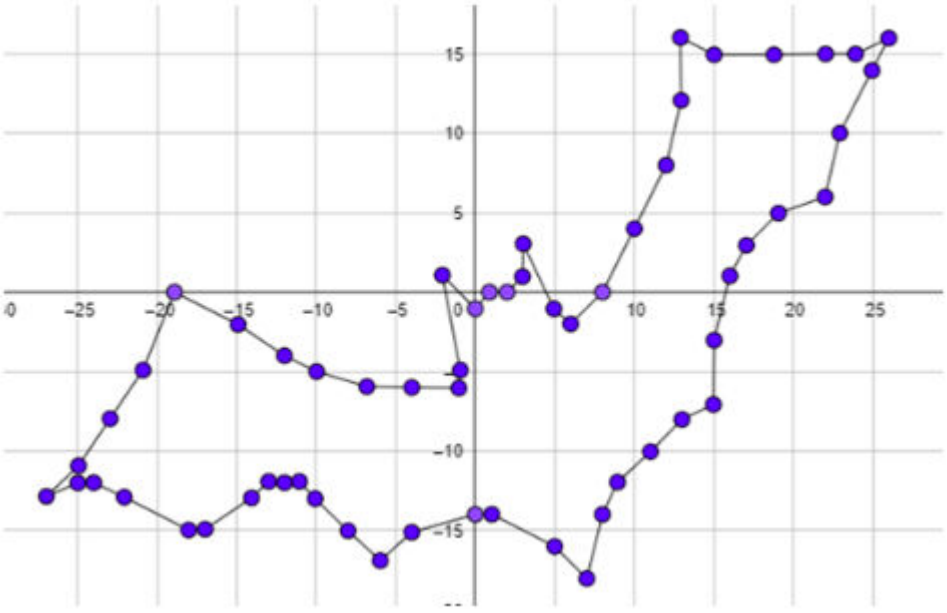


Figura 2



```
coord_2_x = [1, 2, 3, 3, 5, 6, 8, 10, 12, 13, 13, 15, 19, 22, 24, 26, 25,
23, 22, 19, 17, 16, 15, 15, 13, 11, 9, 8, 7, 5, 1, 0, -4, -6, -8, -10, -11,
-12, -13, -14, -17, -18, -22, -24, -25, -27, -25, -23, -21, -19, -15, -12,
-10, -7, -4, -1, -1, -2, 0, 1];
coord_2_y = [0, 0, 1, 3, -1, -2, 0, 4, 8, 12, 16, 15, 15, 15, 15, 16, 14,
10, 6, 5, 3, 1, -3, -7, -8, -10, -12, -14, -18, -16, -14, -14, -15, -17,
-15, -13, -12, -12, -12, -13, -15, -15, -13, -12, -12, -13, -11, -8, -5, 0,
-2, -4, -5, -6, -6, -6, -5, 1, -1, 0];

[v, w] = setSteps(coord_2_x, coord_2_y);
[N, x, y, phi, hx, hy] = cinematicMobile(v, w);

plotRobot(N, x, y, phi, hx, hy, -27, 26, -18, 16);
```

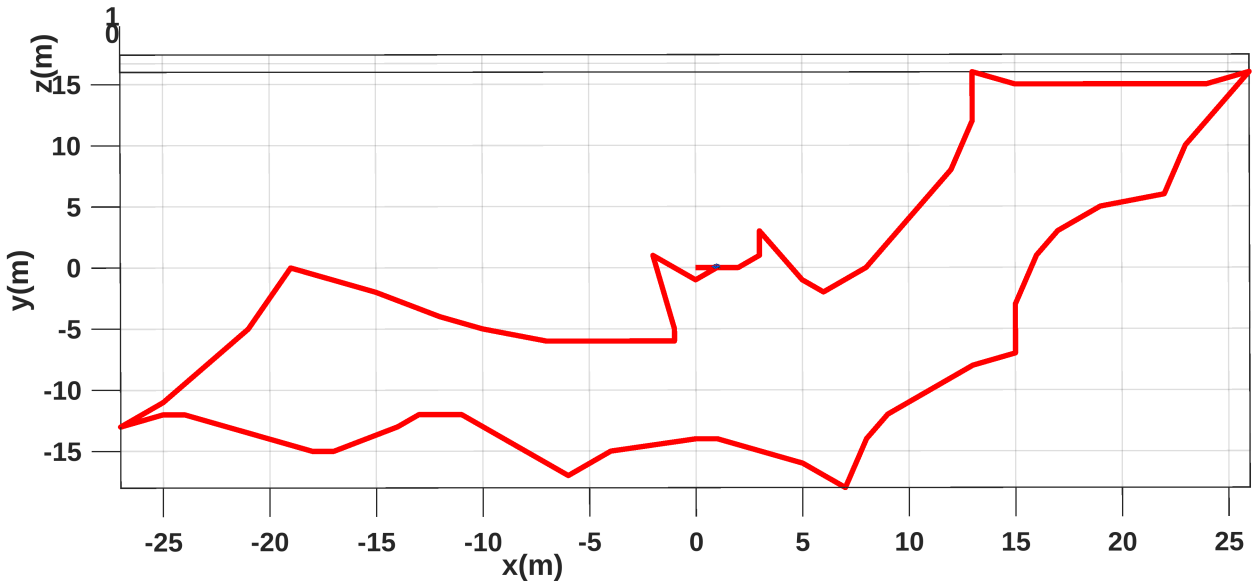
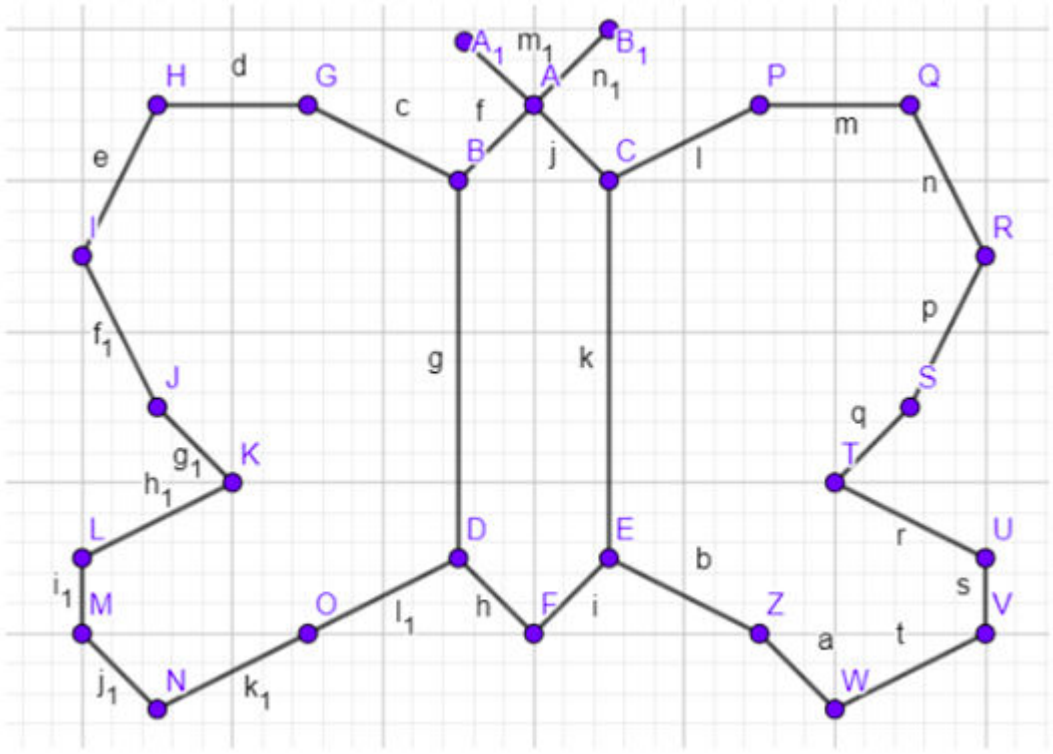


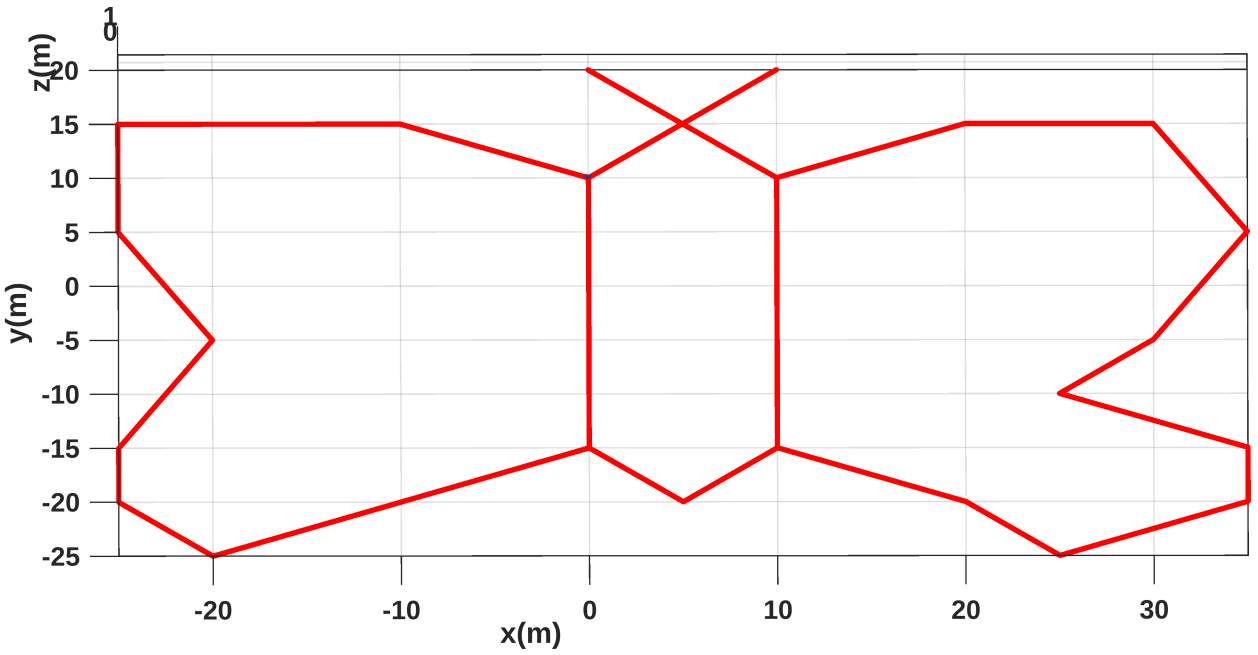
Figura 3




```
coord_3_x = [0, 0, 5, 0, 5, 10, 5, 10, 10, 10, 20, 30, 35, 30, 25, 35, 35,
25, 20, 10, 5, 0, -10, -20, -25, -25, -20, -25, -25, -10, 0];
coord_3_y = [-15, 10, 15, 20, 15 20, 15, 10, -15, 10, 15, 15, 5, -5, -10,
-15, -20, -25, -20, -15, -20, -15, -20, -25, -20, -15, -5, 5, 15, 15, 10];

[v, w] = setSteps(coord_3_x, coord_3_y);
[N, x, y, phi, hx, hy] = cinematicMobile(v, w);

plotRobot(N, x, y, phi, hx, hy, -25, 35, -25, 20);
```


1
0
z(m)
20
15
10
5
0
-5
-10
-15
-20
-25
y(m)
-20
-10
0
10
20
30
x(m)