# EX10

## Table of Contents



Script que resolve o exercício 10 da lista de simulação para entradas indicadas no enunciado.

# Calling Syntax

list_of_solutions=ex10

# I/O Variables

`OU Double Array` **near**: *Nearest solution* [ $\theta_1 \theta_2 \theta_3$] [degrees degrees degrees]

`OU Double Array` **far**: *Further solution* [ $\theta_1 \theta_2 \theta_3$] [degrees degrees degrees]

`OU Bool` **sol**: *Solution* sol=0: No possible solution; sol=1: There was a solution

# Example

```
list_of_solutions=ex10
```

# Hypothesis

RRR planar robot.

# Limitations

A "Forma do usuário" é específica para o exercício de simulação e não tem validade para qualquer configuração de robô.

# Version Control

1.0; Grupo 04; 2025/04/03 ; First issue.

# Group Members


- Guilherme Fortunato Miranda

13683786

- João Pedro Dionizio Calazans

13673086


# Function

```
function [list_of_solutions, solutions]=ex10
```

# Validity

It works in some years (not odds)

# Main Calculations

```
%goal trels -> wrelb
% trelw' wrelt
%mid_transition -> wrels
trelw = utoi([0.1,0.2,30]);
srelb = utoi([-0.1,0.3,0]);
L=[.5 .3];
thetalim = [170 170 170; -170 -170 -170];

P = zeros(4,3);
P(1,:) = [0,0,-90];
P(2,:) = [0.6,-0.3,45];
P(3,:) = [-0.4,0.3,-90];
P(4,:) = [0.8,1.4,30];

%wrelb  = srelb * wrels -> wrelb

list_of_solutions = zeros(2,3,4);
solutions = zeros(1,4);
temp_current = zeros(3);
initial_current = [0 0 0];
```

# Output Data

```
for k = 1:4
    if k == 1
        [list_of_solutions(1,:,k), list_of_solutions(2,:,k),
solutions(:,k)] = solve_robot(P(k,:),initial_current,trelw,srelb,L,thetalim);
    else
        [list_of_solutions(1,:,k), list_of_solutions(2,:,k),
solutions(:,k)] = solve_robot(P(k,:),temp_current,trelw,srelb,L,thetalim);
    end
```

```
            if solutions(1,k) == 1
                temp_current = P(k,:);
            elseif k ~= 1
                temp_current = P(k-1,:);
            end

        end

    end
```

```
ans(:,:,1) =

  148.1062 -100.2528 -167.8534
   81.1758  100.2528 -301.4286


ans(:,:,2) =

    9.0252 -106.4252  112.4000
  -60.4268  106.4252  -30.9983


ans(:,:,3) =

   NaN   NaN   NaN
   NaN   NaN   NaN


ans(:,:,4) =

   NaN   NaN   NaN
   NaN   NaN   NaN
```

*Published with MATLAB® R2024b*