
```

clc, clear
% Parameters
% ALL PARAMETERS ARE IN UNITS OF METRIC SYSTEM (kg, m)
L1 = .25;
L2 = .25;
r1 = .125;
r2 = .125;
m1 = .5;
m2 = .5;
g = 9.81;
I1 = (m1*L1^2)/12;
I2 = (m2*L2^2)/12;
b1 = 10^(-1);
b2 = 10^(-1);
% END OF PARAMETERS

% Part 1
% Input Forward Kinematics DH Table
syms theta1 theta2

DH = [theta1, 0, L1, 0;
      theta2, 0, L2, 0];

% Call Function FK_2DOF
FK_Fnc_Call = FK_2DOF(DH);

% UNITS ARE OF DEGREES!!!
%t = [0 0];
t = [1.1601, 77.2910];

FK_Value = matlabFunction(FK_Fnc_Call);

T = FK_Value(t(1), t(2))

% Input Inverse Kinematics Parameters
% (xc, yc, L1, L2, r)

% ENSURE THAT THE OUTPUT OF R <= L1+L2;
% THIS REPRESENTS THAT THE ROBOT CAN REACH THE POINT (XC, YC)
xc = .3;
yc = .25;
L1 = .25;
L2 = .25;
r = sqrt(xc^2+yc^2);

[IK_FinalTH1, IK_FinalTH2] = IK_2DOF(xc, yc, L1, L2, r);

% Input Velocity Kinematics Parameters
theta1 = 5;
theta2 = 12;

```

```

omega1 = 5; % angular velocity of joint 1
omega2 = 4; % angular velocity of joint 2
L1 = .25;
L2 = .25;

% values of degrees
[VKxdot, VKydot] = VK_2DOF(theta1, theta2, omega1, omega2, L1, L2)

% Define robot parameters
L1 = .25;
L2 = .25;
r1 = .125;
r2 = .125;
m1 = .5;
m2 = .5;
g = 9.81;
I1 = (m1*L1^2)/12;
I2 = (m2*L2^2)/12;
b1 = 10^(-1);
b2 = 10^(-1);
tau = [0; 0];

% M(theta)*theta(..)+C(theta,theta(..))*theta(..)+g(theta)=tau
% SOLVE FOR THETA(..)
% Theta(..) = (tau - g(theta) - C(theta,theta(..))*theta(..))/(M(theta))
f = @(t, theta) [
    theta(3);
    theta(4);

    % Inertia matrix M(theta)
    [I1 + I2 + m1*r1^2 + m2*(L1^2 + r2^2) + 2*m2*L1*r2*cosd(theta(2)), I2 +
    m2*r2^2 + m2*L1*r2*cosd(theta(2));
    I2 + m2*r2^2 + m2*L1*r2*cosd(theta(2)), I2 + m2*r2^2] \ [ -theta(3)*(-
    m2*L1*r2*sind(theta(2))*theta(4) + b1) - m2*L1*r2*sind(theta(2))*(theta(3)
    + theta(4)) - ((m1*r1 + m2*L1)*g*cosd(theta(1)) + m2*r2*g*cosd(theta(1) +
    theta(2))) + tau(1);
    -theta(3)*(m2*L1*r2*sind(theta(2))*theta(3) + b2) -
    m2*r2*g*cosd(theta(1) + theta(2)) + tau(2)]
];

dt = .01;
tspan = 0:dt:10;
initial_cond = [90; -90; 0; 0]; % Initial conditions: [theta1, theta2,
    theta1_dot, theta2_dot]
[ts, thetas] = ode45(f, tspan, initial_cond)

figure;
subplot(2,1,1);
plot(ts, thetas(:, 1), 'b-', 'LineWidth', 1.5);
hold on;
plot(ts, thetas(:, 2), 'r-', 'LineWidth', 1.5);
xlabel('Time (s)');
ylabel('Joint Angles (Degrees)');

```

```

legend('\theta_1 Angle', '\theta_2 Angle');
title('Theta 1/2 vs. Time');
grid on

% If there was a third joint, would continue adding joints. We only have
% two, so we are good.
x_EndEffector = L1*cosd(thetas(:,1))+L2*cosd(thetas(:,1)+thetas(:,2));
y_EndEffector = L1*sind(thetas(:,1))+L2*sind(thetas(:,1)+thetas(:,2));

% End Effector position with reference to joint angles.
subplot(2,1,2);
plot(x_EndEffector, y_EndEffector, 'r-', 'LineWidth', 1.5);
xlabel('X Position (m)');
ylabel('Y Position (m)');
title("End Effector Position W/Reference to Joint Angles");
grid on

```

$T =$

0.2002	-0.9798	0	0.3000
0.9798	0.2002	0	0.2500
0	0	1.0000	0
0	0	0	1.0000

$IK_FinalTH1 =$

1.1601

$IK_FinalTH2 =$

77.2910

$VK\dot{x} =$

-0.7668

$VK\dot{y} =$

3.3969

$ts =$

0
 0.0100
 0.0200
 0.0300
 0.0400
 0.0500

0.0600
0.0700
0.0800
0.0900
0.1000
0.1100
0.1200
0.1300
0.1400
0.1500
0.1600
0.1700
0.1800
0.1900
0.2000
0.2100
0.2200
0.2300
0.2400
0.2500
0.2600
0.2700
0.2800
0.2900
0.3000
0.3100
0.3200
0.3300
0.3400
0.3500
0.3600
0.3700
0.3800
0.3900
0.4000
0.4100
0.4200
0.4300
0.4400
0.4500
0.4600
0.4700
0.4800
0.4900
0.5000
0.5100
0.5200
0.5300
0.5400
0.5500
0.5600
0.5700
0.5800
0.5900

0.6000
0.6100
0.6200
0.6300
0.6400
0.6500
0.6600
0.6700
0.6800
0.6900
0.7000
0.7100
0.7200
0.7300
0.7400
0.7500
0.7600
0.7700
0.7800
0.7900
0.8000
0.8100
0.8200
0.8300
0.8400
0.8500
0.8600
0.8700
0.8800
0.8900
0.9000
0.9100
0.9200
0.9300
0.9400
0.9500
0.9600
0.9700
0.9800
0.9900
1.0000
1.0100
1.0200
1.0300
1.0400
1.0500
1.0600
1.0700
1.0800
1.0900
1.1000
1.1100
1.1200
1.1300

1.1400
1.1500
1.1600
1.1700
1.1800
1.1900
1.2000
1.2100
1.2200
1.2300
1.2400
1.2500
1.2600
1.2700
1.2800
1.2900
1.3000
1.3100
1.3200
1.3300
1.3400
1.3500
1.3600
1.3700
1.3800
1.3900
1.4000
1.4100
1.4200
1.4300
1.4400
1.4500
1.4600
1.4700
1.4800
1.4900
1.5000
1.5100
1.5200
1.5300
1.5400
1.5500
1.5600
1.5700
1.5800
1.5900
1.6000
1.6100
1.6200
1.6300
1.6400
1.6500
1.6600
1.6700

1.6800
1.6900
1.7000
1.7100
1.7200
1.7300
1.7400
1.7500
1.7600
1.7700
1.7800
1.7900
1.8000
1.8100
1.8200
1.8300
1.8400
1.8500
1.8600
1.8700
1.8800
1.8900
1.9000
1.9100
1.9200
1.9300
1.9400
1.9500
1.9600
1.9700
1.9800
1.9900
2.0000
2.0100
2.0200
2.0300
2.0400
2.0500
2.0600
2.0700
2.0800
2.0900
2.1000
2.1100
2.1200
2.1300
2.1400
2.1500
2.1600
2.1700
2.1800
2.1900
2.2000
2.2100

2.2200
2.2300
2.2400
2.2500
2.2600
2.2700
2.2800
2.2900
2.3000
2.3100
2.3200
2.3300
2.3400
2.3500
2.3600
2.3700
2.3800
2.3900
2.4000
2.4100
2.4200
2.4300
2.4400
2.4500
2.4600
2.4700
2.4800
2.4900
2.5000
2.5100
2.5200
2.5300
2.5400
2.5500
2.5600
2.5700
2.5800
2.5900
2.6000
2.6100
2.6200
2.6300
2.6400
2.6500
2.6600
2.6700
2.6800
2.6900
2.7000
2.7100
2.7200
2.7300
2.7400
2.7500

2.7600
2.7700
2.7800
2.7900
2.8000
2.8100
2.8200
2.8300
2.8400
2.8500
2.8600
2.8700
2.8800
2.8900
2.9000
2.9100
2.9200
2.9300
2.9400
2.9500
2.9600
2.9700
2.9800
2.9900
3.0000
3.0100
3.0200
3.0300
3.0400
3.0500
3.0600
3.0700
3.0800
3.0900
3.1000
3.1100
3.1200
3.1300
3.1400
3.1500
3.1600
3.1700
3.1800
3.1900
3.2000
3.2100
3.2200
3.2300
3.2400
3.2500
3.2600
3.2700
3.2800
3.2900

3.3000
3.3100
3.3200
3.3300
3.3400
3.3500
3.3600
3.3700
3.3800
3.3900
3.4000
3.4100
3.4200
3.4300
3.4400
3.4500
3.4600
3.4700
3.4800
3.4900
3.5000
3.5100
3.5200
3.5300
3.5400
3.5500
3.5600
3.5700
3.5800
3.5900
3.6000
3.6100
3.6200
3.6300
3.6400
3.6500
3.6600
3.6700
3.6800
3.6900
3.7000
3.7100
3.7200
3.7300
3.7400
3.7500
3.7600
3.7700
3.7800
3.7900
3.8000
3.8100
3.8200
3.8300

3.8400
3.8500
3.8600
3.8700
3.8800
3.8900
3.9000
3.9100
3.9200
3.9300
3.9400
3.9500
3.9600
3.9700
3.9800
3.9900
4.0000
4.0100
4.0200
4.0300
4.0400
4.0500
4.0600
4.0700
4.0800
4.0900
4.1000
4.1100
4.1200
4.1300
4.1400
4.1500
4.1600
4.1700
4.1800
4.1900
4.2000
4.2100
4.2200
4.2300
4.2400
4.2500
4.2600
4.2700
4.2800
4.2900
4.3000
4.3100
4.3200
4.3300
4.3400
4.3500
4.3600
4.3700

4.3800
4.3900
4.4000
4.4100
4.4200
4.4300
4.4400
4.4500
4.4600
4.4700
4.4800
4.4900
4.5000
4.5100
4.5200
4.5300
4.5400
4.5500
4.5600
4.5700
4.5800
4.5900
4.6000
4.6100
4.6200
4.6300
4.6400
4.6500
4.6600
4.6700
4.6800
4.6900
4.7000
4.7100
4.7200
4.7300
4.7400
4.7500
4.7600
4.7700
4.7800
4.7900
4.8000
4.8100
4.8200
4.8300
4.8400
4.8500
4.8600
4.8700
4.8800
4.8900
4.9000
4.9100

4.9200
4.9300
4.9400
4.9500
4.9600
4.9700
4.9800
4.9900
5.0000
5.0100
5.0200
5.0300
5.0400
5.0500
5.0600
5.0700
5.0800
5.0900
5.1000
5.1100
5.1200
5.1300
5.1400
5.1500
5.1600
5.1700
5.1800
5.1900
5.2000
5.2100
5.2200
5.2300
5.2400
5.2500
5.2600
5.2700
5.2800
5.2900
5.3000
5.3100
5.3200
5.3300
5.3400
5.3500
5.3600
5.3700
5.3800
5.3900
5.4000
5.4100
5.4200
5.4300
5.4400
5.4500

5.4600
5.4700
5.4800
5.4900
5.5000
5.5100
5.5200
5.5300
5.5400
5.5500
5.5600
5.5700
5.5800
5.5900
5.6000
5.6100
5.6200
5.6300
5.6400
5.6500
5.6600
5.6700
5.6800
5.6900
5.7000
5.7100
5.7200
5.7300
5.7400
5.7500
5.7600
5.7700
5.7800
5.7900
5.8000
5.8100
5.8200
5.8300
5.8400
5.8500
5.8600
5.8700
5.8800
5.8900
5.9000
5.9100
5.9200
5.9300
5.9400
5.9500
5.9600
5.9700
5.9800
5.9900

6.0000
6.0100
6.0200
6.0300
6.0400
6.0500
6.0600
6.0700
6.0800
6.0900
6.1000
6.1100
6.1200
6.1300
6.1400
6.1500
6.1600
6.1700
6.1800
6.1900
6.2000
6.2100
6.2200
6.2300
6.2400
6.2500
6.2600
6.2700
6.2800
6.2900
6.3000
6.3100
6.3200
6.3300
6.3400
6.3500
6.3600
6.3700
6.3800
6.3900
6.4000
6.4100
6.4200
6.4300
6.4400
6.4500
6.4600
6.4700
6.4800
6.4900
6.5000
6.5100
6.5200
6.5300

6.5400
6.5500
6.5600
6.5700
6.5800
6.5900
6.6000
6.6100
6.6200
6.6300
6.6400
6.6500
6.6600
6.6700
6.6800
6.6900
6.7000
6.7100
6.7200
6.7300
6.7400
6.7500
6.7600
6.7700
6.7800
6.7900
6.8000
6.8100
6.8200
6.8300
6.8400
6.8500
6.8600
6.8700
6.8800
6.8900
6.9000
6.9100
6.9200
6.9300
6.9400
6.9500
6.9600
6.9700
6.9800
6.9900
7.0000
7.0100
7.0200
7.0300
7.0400
7.0500
7.0600
7.0700

7.0800
7.0900
7.1000
7.1100
7.1200
7.1300
7.1400
7.1500
7.1600
7.1700
7.1800
7.1900
7.2000
7.2100
7.2200
7.2300
7.2400
7.2500
7.2600
7.2700
7.2800
7.2900
7.3000
7.3100
7.3200
7.3300
7.3400
7.3500
7.3600
7.3700
7.3800
7.3900
7.4000
7.4100
7.4200
7.4300
7.4400
7.4500
7.4600
7.4700
7.4800
7.4900
7.5000
7.5100
7.5200
7.5300
7.5400
7.5500
7.5600
7.5700
7.5800
7.5900
7.6000
7.6100

7.6200
7.6300
7.6400
7.6500
7.6600
7.6700
7.6800
7.6900
7.7000
7.7100
7.7200
7.7300
7.7400
7.7500
7.7600
7.7700
7.7800
7.7900
7.8000
7.8100
7.8200
7.8300
7.8400
7.8500
7.8600
7.8700
7.8800
7.8900
7.9000
7.9100
7.9200
7.9300
7.9400
7.9500
7.9600
7.9700
7.9800
7.9900
8.0000
8.0100
8.0200
8.0300
8.0400
8.0500
8.0600
8.0700
8.0800
8.0900
8.1000
8.1100
8.1200
8.1300
8.1400
8.1500

8.1600
8.1700
8.1800
8.1900
8.2000
8.2100
8.2200
8.2300
8.2400
8.2500
8.2600
8.2700
8.2800
8.2900
8.3000
8.3100
8.3200
8.3300
8.3400
8.3500
8.3600
8.3700
8.3800
8.3900
8.4000
8.4100
8.4200
8.4300
8.4400
8.4500
8.4600
8.4700
8.4800
8.4900
8.5000
8.5100
8.5200
8.5300
8.5400
8.5500
8.5600
8.5700
8.5800
8.5900
8.6000
8.6100
8.6200
8.6300
8.6400
8.6500
8.6600
8.6700
8.6800
8.6900

8.7000
8.7100
8.7200
8.7300
8.7400
8.7500
8.7600
8.7700
8.7800
8.7900
8.8000
8.8100
8.8200
8.8300
8.8400
8.8500
8.8600
8.8700
8.8800
8.8900
8.9000
8.9100
8.9200
8.9300
8.9400
8.9500
8.9600
8.9700
8.9800
8.9900
9.0000
9.0100
9.0200
9.0300
9.0400
9.0500
9.0600
9.0700
9.0800
9.0900
9.1000
9.1100
9.1200
9.1300
9.1400
9.1500
9.1600
9.1700
9.1800
9.1900
9.2000
9.2100
9.2200
9.2300

9.2400
9.2500
9.2600
9.2700
9.2800
9.2900
9.3000
9.3100
9.3200
9.3300
9.3400
9.3500
9.3600
9.3700
9.3800
9.3900
9.4000
9.4100
9.4200
9.4300
9.4400
9.4500
9.4600
9.4700
9.4800
9.4900
9.5000
9.5100
9.5200
9.5300
9.5400
9.5500
9.5600
9.5700
9.5800
9.5900
9.6000
9.6100
9.6200
9.6300
9.6400
9.6500
9.6600
9.6700
9.6800
9.6900
9.7000
9.7100
9.7200
9.7300
9.7400
9.7500
9.7600
9.7700

9.7800
9.7900
9.8000
9.8100
9.8200
9.8300
9.8400
9.8500
9.8600
9.8700
9.8800
9.8900
9.9000
9.9100
9.9200
9.9300
9.9400
9.9500
9.9600
9.9700
9.9800
9.9900
10.0000

thetas =

1.0e+03 *

0.0900	-0.0900	0	0
0.0900	-0.0900	-0.0000	-0.0006
0.0900	-0.0900	-0.0000	-0.0012
0.0900	-0.0900	-0.0000	-0.0018
0.0900	-0.0900	-0.0000	-0.0023
0.0900	-0.0901	-0.0000	-0.0029
0.0900	-0.0901	-0.0000	-0.0035
0.0900	-0.0901	-0.0001	-0.0041
0.0900	-0.0902	-0.0001	-0.0046
0.0900	-0.0902	-0.0001	-0.0052
0.0900	-0.0903	-0.0001	-0.0057
0.0900	-0.0903	-0.0001	-0.0063
0.0900	-0.0904	-0.0002	-0.0068
0.0900	-0.0905	-0.0002	-0.0074
0.0900	-0.0906	-0.0003	-0.0079
0.0900	-0.0906	-0.0003	-0.0084
0.0900	-0.0907	-0.0003	-0.0089
0.0900	-0.0908	-0.0004	-0.0094
0.0900	-0.0909	-0.0004	-0.0099
0.0900	-0.0910	-0.0005	-0.0104
0.0900	-0.0911	-0.0006	-0.0108
0.0900	-0.0912	-0.0007	-0.0113
0.0900	-0.0914	-0.0007	-0.0117
0.0899	-0.0915	-0.0008	-0.0121
0.0899	-0.0916	-0.0009	-0.0125

0.0899	-0.0917	-0.0010	-0.0129
0.0899	-0.0919	-0.0011	-0.0133
0.0899	-0.0920	-0.0013	-0.0136
0.0899	-0.0921	-0.0014	-0.0139
0.0899	-0.0923	-0.0016	-0.0142
0.0899	-0.0924	-0.0017	-0.0144
0.0898	-0.0926	-0.0019	-0.0146
0.0898	-0.0927	-0.0021	-0.0148
0.0898	-0.0928	-0.0023	-0.0149
0.0898	-0.0930	-0.0026	-0.0149
0.0897	-0.0931	-0.0028	-0.0149
0.0897	-0.0933	-0.0031	-0.0148
0.0897	-0.0934	-0.0034	-0.0147
0.0896	-0.0936	-0.0037	-0.0145
0.0896	-0.0937	-0.0040	-0.0142
0.0896	-0.0939	-0.0044	-0.0138
0.0895	-0.0940	-0.0047	-0.0133
0.0895	-0.0941	-0.0051	-0.0127
0.0894	-0.0943	-0.0056	-0.0120
0.0894	-0.0944	-0.0060	-0.0111
0.0893	-0.0945	-0.0064	-0.0101
0.0892	-0.0946	-0.0069	-0.0090
0.0892	-0.0947	-0.0073	-0.0078
0.0891	-0.0947	-0.0078	-0.0064
0.0890	-0.0948	-0.0082	-0.0049
0.0889	-0.0948	-0.0086	-0.0032
0.0888	-0.0949	-0.0090	-0.0015
0.0887	-0.0949	-0.0093	0.0003
0.0886	-0.0948	-0.0096	0.0022
0.0886	-0.0948	-0.0098	0.0042
0.0885	-0.0948	-0.0100	0.0061
0.0884	-0.0947	-0.0100	0.0081
0.0883	-0.0946	-0.0100	0.0100
0.0882	-0.0945	-0.0099	0.0118
0.0881	-0.0944	-0.0098	0.0135
0.0880	-0.0942	-0.0096	0.0150
0.0879	-0.0941	-0.0093	0.0164
0.0878	-0.0939	-0.0090	0.0177
0.0877	-0.0937	-0.0086	0.0188
0.0876	-0.0935	-0.0083	0.0197
0.0875	-0.0933	-0.0078	0.0205
0.0874	-0.0931	-0.0074	0.0211
0.0874	-0.0929	-0.0070	0.0216
0.0873	-0.0927	-0.0065	0.0220
0.0872	-0.0925	-0.0061	0.0222
0.0872	-0.0922	-0.0057	0.0223
0.0871	-0.0920	-0.0053	0.0223
0.0871	-0.0918	-0.0049	0.0223
0.0870	-0.0916	-0.0046	0.0221
0.0870	-0.0913	-0.0042	0.0220
0.0869	-0.0911	-0.0039	0.0217
0.0869	-0.0909	-0.0036	0.0214
0.0869	-0.0907	-0.0034	0.0211
0.0868	-0.0905	-0.0031	0.0207

0.0868	-0.0903	-0.0029	0.0203
0.0868	-0.0901	-0.0027	0.0199
0.0868	-0.0899	-0.0024	0.0194
0.0867	-0.0897	-0.0023	0.0190
0.0867	-0.0895	-0.0021	0.0185
0.0867	-0.0893	-0.0019	0.0180
0.0867	-0.0891	-0.0018	0.0175
0.0867	-0.0890	-0.0017	0.0170
0.0866	-0.0888	-0.0015	0.0164
0.0866	-0.0886	-0.0014	0.0159
0.0866	-0.0885	-0.0013	0.0154
0.0866	-0.0883	-0.0012	0.0148
0.0866	-0.0882	-0.0011	0.0143
0.0866	-0.0881	-0.0010	0.0137
0.0866	-0.0879	-0.0010	0.0132
0.0866	-0.0878	-0.0009	0.0126
0.0865	-0.0877	-0.0008	0.0121
0.0865	-0.0876	-0.0008	0.0115
0.0865	-0.0874	-0.0007	0.0109
0.0865	-0.0873	-0.0007	0.0104
0.0865	-0.0872	-0.0006	0.0098
0.0865	-0.0871	-0.0006	0.0092
0.0865	-0.0870	-0.0006	0.0087
0.0865	-0.0870	-0.0005	0.0081
0.0865	-0.0869	-0.0005	0.0076
0.0865	-0.0868	-0.0005	0.0070
0.0865	-0.0867	-0.0005	0.0064
0.0865	-0.0867	-0.0005	0.0059
0.0865	-0.0866	-0.0005	0.0053
0.0865	-0.0866	-0.0004	0.0048
0.0865	-0.0865	-0.0004	0.0042
0.0865	-0.0865	-0.0004	0.0037
0.0865	-0.0865	-0.0004	0.0031
0.0864	-0.0864	-0.0004	0.0026
0.0864	-0.0864	-0.0004	0.0020
0.0864	-0.0864	-0.0004	0.0015
0.0864	-0.0864	-0.0005	0.0010
0.0864	-0.0864	-0.0005	0.0005
0.0864	-0.0864	-0.0005	-0.0001
0.0864	-0.0864	-0.0005	-0.0006
0.0864	-0.0864	-0.0005	-0.0011
0.0864	-0.0864	-0.0006	-0.0016
0.0864	-0.0864	-0.0006	-0.0021
0.0864	-0.0864	-0.0006	-0.0026
0.0864	-0.0865	-0.0007	-0.0031
0.0864	-0.0865	-0.0007	-0.0035
0.0864	-0.0865	-0.0007	-0.0040
0.0864	-0.0866	-0.0008	-0.0045
0.0864	-0.0866	-0.0008	-0.0049
0.0864	-0.0867	-0.0009	-0.0053
0.0863	-0.0867	-0.0010	-0.0057
0.0863	-0.0868	-0.0010	-0.0061
0.0863	-0.0869	-0.0011	-0.0065
0.0863	-0.0869	-0.0012	-0.0069

0.0863	-0.0870	-0.0013	-0.0073
0.0863	-0.0871	-0.0014	-0.0076
0.0863	-0.0871	-0.0015	-0.0079
0.0863	-0.0872	-0.0016	-0.0082
0.0862	-0.0873	-0.0017	-0.0084
0.0862	-0.0874	-0.0018	-0.0087
0.0862	-0.0875	-0.0020	-0.0089
0.0862	-0.0876	-0.0021	-0.0090
0.0862	-0.0877	-0.0023	-0.0092
0.0861	-0.0878	-0.0025	-0.0093
0.0861	-0.0878	-0.0027	-0.0093
0.0861	-0.0879	-0.0029	-0.0093
0.0861	-0.0880	-0.0031	-0.0093
0.0860	-0.0881	-0.0033	-0.0092
0.0860	-0.0882	-0.0035	-0.0090
0.0860	-0.0883	-0.0038	-0.0088
0.0859	-0.0884	-0.0040	-0.0085
0.0859	-0.0885	-0.0043	-0.0081
0.0858	-0.0886	-0.0046	-0.0077
0.0858	-0.0886	-0.0049	-0.0072
0.0857	-0.0887	-0.0052	-0.0066
0.0857	-0.0888	-0.0055	-0.0059
0.0856	-0.0888	-0.0058	-0.0051
0.0856	-0.0889	-0.0061	-0.0043
0.0855	-0.0889	-0.0065	-0.0033
0.0854	-0.0889	-0.0068	-0.0023
0.0854	-0.0889	-0.0071	-0.0012
0.0853	-0.0889	-0.0074	-0.0000
0.0852	-0.0889	-0.0076	0.0012
0.0851	-0.0889	-0.0079	0.0025
0.0851	-0.0889	-0.0081	0.0038
0.0850	-0.0888	-0.0082	0.0052
0.0849	-0.0888	-0.0084	0.0066
0.0848	-0.0887	-0.0085	0.0080
0.0847	-0.0886	-0.0085	0.0093
0.0846	-0.0885	-0.0085	0.0106
0.0846	-0.0884	-0.0085	0.0119
0.0845	-0.0883	-0.0084	0.0131
0.0844	-0.0882	-0.0082	0.0142
0.0843	-0.0880	-0.0081	0.0152
0.0842	-0.0879	-0.0079	0.0161
0.0841	-0.0877	-0.0077	0.0170
0.0841	-0.0875	-0.0074	0.0177
0.0840	-0.0873	-0.0071	0.0183
0.0839	-0.0871	-0.0069	0.0188
0.0839	-0.0870	-0.0066	0.0192
0.0838	-0.0868	-0.0063	0.0195
0.0837	-0.0866	-0.0060	0.0198
0.0837	-0.0864	-0.0057	0.0199
0.0836	-0.0862	-0.0054	0.0200
0.0836	-0.0860	-0.0051	0.0200
0.0835	-0.0858	-0.0048	0.0199
0.0835	-0.0856	-0.0045	0.0198
0.0834	-0.0854	-0.0043	0.0196

0.0834	-0.0852	-0.0040	0.0194
0.0834	-0.0850	-0.0038	0.0192
0.0833	-0.0848	-0.0036	0.0189
0.0833	-0.0846	-0.0034	0.0186
0.0832	-0.0844	-0.0032	0.0183
0.0832	-0.0842	-0.0030	0.0179
0.0832	-0.0841	-0.0028	0.0175
0.0832	-0.0839	-0.0027	0.0171
0.0831	-0.0837	-0.0025	0.0167
0.0831	-0.0836	-0.0024	0.0163
0.0831	-0.0834	-0.0022	0.0158
0.0831	-0.0832	-0.0021	0.0154
0.0830	-0.0831	-0.0020	0.0149
0.0830	-0.0829	-0.0019	0.0145
0.0830	-0.0828	-0.0018	0.0140
0.0830	-0.0827	-0.0017	0.0135
0.0830	-0.0825	-0.0016	0.0130
0.0830	-0.0824	-0.0016	0.0125
0.0829	-0.0823	-0.0015	0.0121
0.0829	-0.0822	-0.0014	0.0116
0.0829	-0.0820	-0.0014	0.0111
0.0829	-0.0819	-0.0013	0.0106
0.0829	-0.0818	-0.0013	0.0101
0.0829	-0.0817	-0.0012	0.0096
0.0829	-0.0816	-0.0012	0.0091
0.0828	-0.0816	-0.0012	0.0086
0.0828	-0.0815	-0.0011	0.0081
0.0828	-0.0814	-0.0011	0.0076
0.0828	-0.0813	-0.0011	0.0071
0.0828	-0.0813	-0.0011	0.0066
0.0828	-0.0812	-0.0011	0.0062
0.0828	-0.0811	-0.0011	0.0057
0.0828	-0.0811	-0.0011	0.0052
0.0828	-0.0810	-0.0011	0.0047
0.0828	-0.0810	-0.0011	0.0043
0.0827	-0.0809	-0.0011	0.0038
0.0827	-0.0809	-0.0011	0.0033
0.0827	-0.0809	-0.0011	0.0029
0.0827	-0.0808	-0.0011	0.0024
0.0827	-0.0808	-0.0011	0.0020
0.0827	-0.0808	-0.0011	0.0016
0.0827	-0.0808	-0.0012	0.0011
0.0827	-0.0808	-0.0012	0.0007
0.0826	-0.0808	-0.0012	0.0003
0.0826	-0.0808	-0.0013	-0.0001
0.0826	-0.0808	-0.0013	-0.0004
0.0826	-0.0808	-0.0014	-0.0008
0.0826	-0.0808	-0.0014	-0.0012
0.0826	-0.0808	-0.0015	-0.0015
0.0826	-0.0808	-0.0015	-0.0019
0.0826	-0.0808	-0.0016	-0.0022
0.0825	-0.0809	-0.0017	-0.0025
0.0825	-0.0809	-0.0018	-0.0028
0.0825	-0.0809	-0.0019	-0.0030

0.0825	-0.0810	-0.0019	-0.0032
0.0825	-0.0810	-0.0020	-0.0035
0.0824	-0.0810	-0.0021	-0.0037
0.0824	-0.0811	-0.0023	-0.0038
0.0824	-0.0811	-0.0024	-0.0040
0.0824	-0.0811	-0.0025	-0.0041
0.0823	-0.0812	-0.0026	-0.0041
0.0823	-0.0812	-0.0028	-0.0042
0.0823	-0.0813	-0.0029	-0.0042
0.0823	-0.0813	-0.0031	-0.0042
0.0822	-0.0813	-0.0033	-0.0041
0.0822	-0.0814	-0.0034	-0.0040
0.0822	-0.0814	-0.0036	-0.0038
0.0821	-0.0815	-0.0038	-0.0036
0.0821	-0.0815	-0.0040	-0.0033
0.0820	-0.0815	-0.0042	-0.0030
0.0820	-0.0816	-0.0044	-0.0027
0.0820	-0.0816	-0.0046	-0.0023
0.0819	-0.0816	-0.0049	-0.0018
0.0819	-0.0816	-0.0051	-0.0013
0.0818	-0.0816	-0.0053	-0.0007
0.0817	-0.0816	-0.0055	-0.0000
0.0817	-0.0816	-0.0058	0.0007
0.0816	-0.0816	-0.0060	0.0014
0.0816	-0.0816	-0.0062	0.0022
0.0815	-0.0816	-0.0064	0.0031
0.0814	-0.0815	-0.0066	0.0040
0.0814	-0.0815	-0.0067	0.0049
0.0813	-0.0814	-0.0069	0.0058
0.0812	-0.0814	-0.0070	0.0068
0.0812	-0.0813	-0.0071	0.0078
0.0811	-0.0812	-0.0072	0.0087
0.0810	-0.0811	-0.0073	0.0097
0.0810	-0.0810	-0.0073	0.0106
0.0809	-0.0809	-0.0073	0.0116
0.0808	-0.0808	-0.0073	0.0124
0.0807	-0.0807	-0.0073	0.0133
0.0807	-0.0805	-0.0072	0.0141
0.0806	-0.0804	-0.0071	0.0148
0.0805	-0.0802	-0.0070	0.0155
0.0804	-0.0801	-0.0068	0.0161
0.0804	-0.0799	-0.0067	0.0166
0.0803	-0.0797	-0.0065	0.0171
0.0802	-0.0796	-0.0063	0.0175
0.0802	-0.0794	-0.0061	0.0178
0.0801	-0.0792	-0.0059	0.0181
0.0801	-0.0790	-0.0057	0.0183
0.0800	-0.0789	-0.0055	0.0185
0.0800	-0.0787	-0.0053	0.0185
0.0799	-0.0785	-0.0051	0.0186
0.0799	-0.0783	-0.0049	0.0186
0.0798	-0.0781	-0.0047	0.0185
0.0798	-0.0779	-0.0045	0.0184
0.0797	-0.0777	-0.0043	0.0183

0.0797	-0.0776	-0.0041	0.0181
0.0796	-0.0774	-0.0039	0.0179
0.0796	-0.0772	-0.0038	0.0177
0.0796	-0.0770	-0.0036	0.0174
0.0795	-0.0769	-0.0034	0.0171
0.0795	-0.0767	-0.0033	0.0168
0.0795	-0.0765	-0.0031	0.0165
0.0794	-0.0764	-0.0030	0.0162
0.0794	-0.0762	-0.0029	0.0158
0.0794	-0.0760	-0.0028	0.0155
0.0793	-0.0759	-0.0027	0.0151
0.0793	-0.0757	-0.0025	0.0147
0.0793	-0.0756	-0.0025	0.0143
0.0793	-0.0755	-0.0024	0.0139
0.0792	-0.0753	-0.0023	0.0135
0.0792	-0.0752	-0.0022	0.0131
0.0792	-0.0751	-0.0021	0.0127
0.0792	-0.0749	-0.0021	0.0123
0.0792	-0.0748	-0.0020	0.0119
0.0791	-0.0747	-0.0019	0.0114
0.0791	-0.0746	-0.0019	0.0110
0.0791	-0.0745	-0.0018	0.0106
0.0791	-0.0744	-0.0018	0.0102
0.0791	-0.0743	-0.0018	0.0097
0.0791	-0.0742	-0.0017	0.0093
0.0790	-0.0741	-0.0017	0.0089
0.0790	-0.0740	-0.0017	0.0085
0.0790	-0.0739	-0.0017	0.0081
0.0790	-0.0738	-0.0016	0.0077
0.0790	-0.0738	-0.0016	0.0072
0.0790	-0.0737	-0.0016	0.0068
0.0789	-0.0736	-0.0016	0.0064
0.0789	-0.0736	-0.0016	0.0060
0.0789	-0.0735	-0.0016	0.0057
0.0789	-0.0734	-0.0016	0.0053
0.0789	-0.0734	-0.0016	0.0049
0.0789	-0.0733	-0.0016	0.0045
0.0788	-0.0733	-0.0017	0.0042
0.0788	-0.0733	-0.0017	0.0038
0.0788	-0.0732	-0.0017	0.0035
0.0788	-0.0732	-0.0017	0.0031
0.0788	-0.0732	-0.0018	0.0028
0.0788	-0.0731	-0.0018	0.0025
0.0787	-0.0731	-0.0019	0.0022
0.0787	-0.0731	-0.0019	0.0019
0.0787	-0.0731	-0.0020	0.0017
0.0787	-0.0731	-0.0020	0.0014
0.0787	-0.0730	-0.0021	0.0012
0.0786	-0.0730	-0.0022	0.0009
0.0786	-0.0730	-0.0022	0.0007
0.0786	-0.0730	-0.0023	0.0006
0.0786	-0.0730	-0.0024	0.0004
0.0785	-0.0730	-0.0025	0.0003
0.0785	-0.0730	-0.0026	0.0002

0.0785	-0.0730	-0.0027	0.0001
0.0785	-0.0730	-0.0028	-0.0000
0.0784	-0.0730	-0.0029	-0.0000
0.0784	-0.0730	-0.0030	-0.0001
0.0784	-0.0730	-0.0031	-0.0000
0.0783	-0.0730	-0.0033	0.0000
0.0783	-0.0730	-0.0034	0.0001
0.0783	-0.0730	-0.0035	0.0002
0.0782	-0.0730	-0.0037	0.0004
0.0782	-0.0730	-0.0038	0.0006
0.0782	-0.0730	-0.0040	0.0008
0.0781	-0.0730	-0.0041	0.0011
0.0781	-0.0730	-0.0043	0.0014
0.0780	-0.0730	-0.0045	0.0017
0.0780	-0.0729	-0.0046	0.0021
0.0779	-0.0729	-0.0048	0.0026
0.0779	-0.0729	-0.0050	0.0030
0.0778	-0.0729	-0.0052	0.0036
0.0778	-0.0728	-0.0053	0.0041
0.0777	-0.0728	-0.0055	0.0047
0.0777	-0.0727	-0.0056	0.0053
0.0776	-0.0727	-0.0058	0.0060
0.0776	-0.0726	-0.0059	0.0066
0.0775	-0.0725	-0.0061	0.0073
0.0774	-0.0725	-0.0062	0.0081
0.0774	-0.0724	-0.0063	0.0088
0.0773	-0.0723	-0.0064	0.0095
0.0772	-0.0722	-0.0065	0.0103
0.0772	-0.0721	-0.0065	0.0110
0.0771	-0.0720	-0.0066	0.0118
0.0771	-0.0718	-0.0066	0.0125
0.0770	-0.0717	-0.0066	0.0132
0.0769	-0.0716	-0.0066	0.0138
0.0769	-0.0714	-0.0066	0.0145
0.0768	-0.0713	-0.0066	0.0151
0.0767	-0.0711	-0.0065	0.0156
0.0767	-0.0710	-0.0064	0.0161
0.0766	-0.0708	-0.0063	0.0166
0.0765	-0.0706	-0.0062	0.0170
0.0765	-0.0705	-0.0061	0.0174
0.0764	-0.0703	-0.0060	0.0177
0.0763	-0.0701	-0.0059	0.0180
0.0763	-0.0699	-0.0057	0.0182
0.0762	-0.0698	-0.0056	0.0184
0.0762	-0.0696	-0.0054	0.0186
0.0761	-0.0694	-0.0053	0.0187
0.0761	-0.0692	-0.0051	0.0187
0.0760	-0.0690	-0.0049	0.0187
0.0760	-0.0688	-0.0048	0.0187
0.0759	-0.0686	-0.0046	0.0186
0.0759	-0.0684	-0.0045	0.0185
0.0758	-0.0683	-0.0043	0.0184
0.0758	-0.0681	-0.0042	0.0182
0.0758	-0.0679	-0.0040	0.0180

0.0757	-0.0677	-0.0039	0.0178
0.0757	-0.0675	-0.0037	0.0176
0.0756	-0.0674	-0.0036	0.0173
0.0756	-0.0672	-0.0035	0.0171
0.0756	-0.0670	-0.0034	0.0168
0.0755	-0.0669	-0.0032	0.0165
0.0755	-0.0667	-0.0031	0.0162
0.0755	-0.0665	-0.0030	0.0159
0.0754	-0.0664	-0.0029	0.0155
0.0754	-0.0662	-0.0028	0.0152
0.0754	-0.0661	-0.0028	0.0148
0.0754	-0.0659	-0.0027	0.0145
0.0753	-0.0658	-0.0026	0.0141
0.0753	-0.0656	-0.0025	0.0138
0.0753	-0.0655	-0.0025	0.0134
0.0753	-0.0654	-0.0024	0.0131
0.0752	-0.0653	-0.0023	0.0127
0.0752	-0.0651	-0.0023	0.0123
0.0752	-0.0650	-0.0022	0.0119
0.0752	-0.0649	-0.0022	0.0116
0.0751	-0.0648	-0.0022	0.0112
0.0751	-0.0647	-0.0021	0.0108
0.0751	-0.0646	-0.0021	0.0105
0.0751	-0.0645	-0.0021	0.0101
0.0751	-0.0644	-0.0021	0.0098
0.0750	-0.0643	-0.0020	0.0094
0.0750	-0.0642	-0.0020	0.0090
0.0750	-0.0641	-0.0020	0.0087
0.0750	-0.0640	-0.0020	0.0084
0.0750	-0.0639	-0.0020	0.0080
0.0749	-0.0638	-0.0020	0.0077
0.0749	-0.0638	-0.0020	0.0074
0.0749	-0.0637	-0.0020	0.0070
0.0749	-0.0636	-0.0020	0.0067
0.0749	-0.0635	-0.0020	0.0064
0.0748	-0.0635	-0.0021	0.0061
0.0748	-0.0634	-0.0021	0.0059
0.0748	-0.0634	-0.0021	0.0056
0.0748	-0.0633	-0.0021	0.0053
0.0748	-0.0633	-0.0022	0.0051
0.0747	-0.0632	-0.0022	0.0049
0.0747	-0.0632	-0.0023	0.0046
0.0747	-0.0631	-0.0023	0.0044
0.0747	-0.0631	-0.0024	0.0042
0.0746	-0.0630	-0.0024	0.0041
0.0746	-0.0630	-0.0025	0.0039
0.0746	-0.0630	-0.0026	0.0038
0.0746	-0.0629	-0.0026	0.0037
0.0745	-0.0629	-0.0027	0.0036
0.0745	-0.0628	-0.0028	0.0035
0.0745	-0.0628	-0.0029	0.0034
0.0745	-0.0628	-0.0030	0.0034
0.0744	-0.0627	-0.0031	0.0034
0.0744	-0.0627	-0.0032	0.0034

0.0744	-0.0627	-0.0033	0.0035
0.0743	-0.0626	-0.0034	0.0035
0.0743	-0.0626	-0.0035	0.0036
0.0743	-0.0626	-0.0036	0.0038
0.0742	-0.0625	-0.0037	0.0039
0.0742	-0.0625	-0.0039	0.0041
0.0741	-0.0624	-0.0040	0.0044
0.0741	-0.0624	-0.0041	0.0046
0.0741	-0.0624	-0.0043	0.0049
0.0740	-0.0623	-0.0044	0.0052
0.0740	-0.0623	-0.0045	0.0056
0.0739	-0.0622	-0.0047	0.0060
0.0739	-0.0621	-0.0048	0.0064
0.0738	-0.0621	-0.0050	0.0069
0.0738	-0.0620	-0.0051	0.0074
0.0737	-0.0619	-0.0053	0.0079
0.0737	-0.0618	-0.0054	0.0084
0.0736	-0.0617	-0.0055	0.0090
0.0736	-0.0617	-0.0057	0.0096
0.0735	-0.0616	-0.0058	0.0102
0.0734	-0.0615	-0.0059	0.0108
0.0734	-0.0613	-0.0060	0.0115
0.0733	-0.0612	-0.0061	0.0121
0.0733	-0.0611	-0.0062	0.0128
0.0732	-0.0610	-0.0062	0.0134
0.0731	-0.0608	-0.0063	0.0140
0.0731	-0.0607	-0.0063	0.0147
0.0730	-0.0605	-0.0064	0.0153
0.0730	-0.0604	-0.0064	0.0159
0.0729	-0.0602	-0.0064	0.0164
0.0728	-0.0601	-0.0064	0.0170
0.0728	-0.0599	-0.0063	0.0175
0.0727	-0.0597	-0.0063	0.0180
0.0726	-0.0595	-0.0062	0.0184
0.0726	-0.0593	-0.0062	0.0188
0.0725	-0.0591	-0.0061	0.0192
0.0725	-0.0589	-0.0060	0.0195
0.0724	-0.0588	-0.0059	0.0198
0.0723	-0.0586	-0.0058	0.0200
0.0723	-0.0584	-0.0057	0.0202
0.0722	-0.0582	-0.0056	0.0204
0.0722	-0.0579	-0.0054	0.0205
0.0721	-0.0577	-0.0053	0.0206
0.0721	-0.0575	-0.0052	0.0206
0.0720	-0.0573	-0.0050	0.0206
0.0720	-0.0571	-0.0049	0.0206
0.0719	-0.0569	-0.0048	0.0205
0.0719	-0.0567	-0.0046	0.0204
0.0718	-0.0565	-0.0045	0.0203
0.0718	-0.0563	-0.0044	0.0202
0.0717	-0.0561	-0.0042	0.0200
0.0717	-0.0559	-0.0041	0.0199
0.0716	-0.0557	-0.0040	0.0197
0.0716	-0.0555	-0.0039	0.0194

0.0716	-0.0553	-0.0038	0.0192
0.0715	-0.0551	-0.0036	0.0189
0.0715	-0.0549	-0.0035	0.0187
0.0715	-0.0548	-0.0034	0.0184
0.0714	-0.0546	-0.0033	0.0181
0.0714	-0.0544	-0.0032	0.0178
0.0714	-0.0542	-0.0031	0.0175
0.0713	-0.0540	-0.0031	0.0172
0.0713	-0.0539	-0.0030	0.0169
0.0713	-0.0537	-0.0029	0.0166
0.0712	-0.0535	-0.0028	0.0163
0.0712	-0.0534	-0.0028	0.0159
0.0712	-0.0532	-0.0027	0.0156
0.0712	-0.0531	-0.0026	0.0153
0.0711	-0.0529	-0.0026	0.0149
0.0711	-0.0528	-0.0025	0.0146
0.0711	-0.0526	-0.0025	0.0143
0.0711	-0.0525	-0.0024	0.0139
0.0710	-0.0523	-0.0024	0.0136
0.0710	-0.0522	-0.0024	0.0133
0.0710	-0.0521	-0.0023	0.0130
0.0710	-0.0519	-0.0023	0.0126
0.0709	-0.0518	-0.0023	0.0123
0.0709	-0.0517	-0.0023	0.0120
0.0709	-0.0516	-0.0023	0.0117
0.0709	-0.0515	-0.0022	0.0114
0.0709	-0.0514	-0.0022	0.0111
0.0708	-0.0512	-0.0022	0.0108
0.0708	-0.0511	-0.0022	0.0105
0.0708	-0.0510	-0.0022	0.0102
0.0708	-0.0509	-0.0022	0.0100
0.0707	-0.0508	-0.0022	0.0097
0.0707	-0.0507	-0.0023	0.0095
0.0707	-0.0506	-0.0023	0.0092
0.0707	-0.0506	-0.0023	0.0090
0.0707	-0.0505	-0.0023	0.0088
0.0706	-0.0504	-0.0023	0.0086
0.0706	-0.0503	-0.0024	0.0084
0.0706	-0.0502	-0.0024	0.0082
0.0706	-0.0501	-0.0025	0.0080
0.0705	-0.0501	-0.0025	0.0079
0.0705	-0.0500	-0.0026	0.0077
0.0705	-0.0499	-0.0026	0.0076
0.0705	-0.0498	-0.0027	0.0075
0.0704	-0.0497	-0.0027	0.0074
0.0704	-0.0497	-0.0028	0.0073
0.0704	-0.0496	-0.0029	0.0073
0.0703	-0.0495	-0.0029	0.0072
0.0703	-0.0495	-0.0030	0.0072
0.0703	-0.0494	-0.0031	0.0073
0.0702	-0.0493	-0.0032	0.0073
0.0702	-0.0492	-0.0033	0.0074
0.0702	-0.0492	-0.0034	0.0074
0.0702	-0.0491	-0.0035	0.0076

0.0701	-0.0490	-0.0036	0.0077
0.0701	-0.0489	-0.0037	0.0079
0.0700	-0.0489	-0.0038	0.0081
0.0700	-0.0488	-0.0039	0.0083
0.0700	-0.0487	-0.0040	0.0085
0.0699	-0.0486	-0.0042	0.0088
0.0699	-0.0485	-0.0043	0.0091
0.0698	-0.0484	-0.0044	0.0095
0.0698	-0.0483	-0.0046	0.0099
0.0697	-0.0482	-0.0047	0.0103
0.0697	-0.0481	-0.0048	0.0107
0.0696	-0.0480	-0.0050	0.0112
0.0696	-0.0479	-0.0051	0.0117
0.0695	-0.0478	-0.0052	0.0122
0.0695	-0.0477	-0.0054	0.0127
0.0694	-0.0475	-0.0055	0.0133
0.0694	-0.0474	-0.0056	0.0139
0.0693	-0.0472	-0.0058	0.0145
0.0693	-0.0471	-0.0059	0.0151
0.0692	-0.0469	-0.0060	0.0157
0.0691	-0.0468	-0.0061	0.0164
0.0691	-0.0466	-0.0062	0.0170
0.0690	-0.0464	-0.0063	0.0177
0.0690	-0.0463	-0.0063	0.0183
0.0689	-0.0461	-0.0064	0.0189
0.0688	-0.0459	-0.0064	0.0196
0.0688	-0.0457	-0.0065	0.0202
0.0687	-0.0455	-0.0065	0.0208
0.0686	-0.0453	-0.0065	0.0213
0.0686	-0.0451	-0.0065	0.0219
0.0685	-0.0448	-0.0065	0.0224
0.0684	-0.0446	-0.0065	0.0229
0.0684	-0.0444	-0.0065	0.0233
0.0683	-0.0441	-0.0064	0.0238
0.0682	-0.0439	-0.0064	0.0242
0.0682	-0.0437	-0.0063	0.0245
0.0681	-0.0434	-0.0062	0.0248
0.0681	-0.0432	-0.0062	0.0251
0.0680	-0.0429	-0.0061	0.0254
0.0679	-0.0426	-0.0060	0.0256
0.0679	-0.0424	-0.0059	0.0258
0.0678	-0.0421	-0.0058	0.0259
0.0678	-0.0419	-0.0056	0.0260
0.0677	-0.0416	-0.0055	0.0261
0.0677	-0.0414	-0.0054	0.0261
0.0676	-0.0411	-0.0053	0.0261
0.0675	-0.0408	-0.0052	0.0261
0.0675	-0.0406	-0.0050	0.0261
0.0674	-0.0403	-0.0049	0.0260
0.0674	-0.0401	-0.0048	0.0259
0.0674	-0.0398	-0.0047	0.0258
0.0673	-0.0395	-0.0046	0.0257
0.0673	-0.0393	-0.0045	0.0255
0.0672	-0.0390	-0.0043	0.0254

0.0672	-0.0388	-0.0042	0.0252
0.0671	-0.0385	-0.0041	0.0250
0.0671	-0.0383	-0.0040	0.0248
0.0671	-0.0380	-0.0039	0.0246
0.0670	-0.0378	-0.0038	0.0244
0.0670	-0.0375	-0.0037	0.0242
0.0669	-0.0373	-0.0037	0.0240
0.0669	-0.0371	-0.0036	0.0238
0.0669	-0.0368	-0.0035	0.0236
0.0668	-0.0366	-0.0034	0.0233
0.0668	-0.0363	-0.0034	0.0231
0.0668	-0.0361	-0.0033	0.0229
0.0667	-0.0359	-0.0032	0.0226
0.0667	-0.0357	-0.0032	0.0224
0.0667	-0.0354	-0.0031	0.0222
0.0666	-0.0352	-0.0031	0.0219
0.0666	-0.0350	-0.0030	0.0217
0.0666	-0.0348	-0.0030	0.0215
0.0665	-0.0346	-0.0029	0.0212
0.0665	-0.0344	-0.0029	0.0210
0.0665	-0.0342	-0.0029	0.0208
0.0665	-0.0340	-0.0029	0.0206
0.0664	-0.0337	-0.0028	0.0204
0.0664	-0.0335	-0.0028	0.0202
0.0664	-0.0333	-0.0028	0.0200
0.0663	-0.0331	-0.0028	0.0198
0.0663	-0.0329	-0.0028	0.0196
0.0663	-0.0327	-0.0028	0.0195
0.0663	-0.0326	-0.0028	0.0193
0.0662	-0.0324	-0.0028	0.0192
0.0662	-0.0322	-0.0028	0.0190
0.0662	-0.0320	-0.0028	0.0189
0.0662	-0.0318	-0.0028	0.0188
0.0661	-0.0316	-0.0028	0.0187
0.0661	-0.0314	-0.0029	0.0186
0.0661	-0.0312	-0.0029	0.0185
0.0660	-0.0311	-0.0029	0.0184
0.0660	-0.0309	-0.0029	0.0183
0.0660	-0.0307	-0.0030	0.0183
0.0659	-0.0305	-0.0030	0.0183
0.0659	-0.0303	-0.0031	0.0182
0.0659	-0.0301	-0.0031	0.0182
0.0659	-0.0300	-0.0032	0.0183
0.0658	-0.0298	-0.0032	0.0183
0.0658	-0.0296	-0.0033	0.0183
0.0658	-0.0294	-0.0033	0.0184
0.0657	-0.0292	-0.0034	0.0185
0.0657	-0.0290	-0.0035	0.0186
0.0657	-0.0288	-0.0036	0.0187
0.0656	-0.0287	-0.0036	0.0189
0.0656	-0.0285	-0.0037	0.0191
0.0655	-0.0283	-0.0038	0.0193
0.0655	-0.0281	-0.0039	0.0195
0.0655	-0.0279	-0.0040	0.0197

0.0654	-0.0277	-0.0041	0.0200
0.0654	-0.0275	-0.0042	0.0203
0.0653	-0.0273	-0.0043	0.0206
0.0653	-0.0271	-0.0044	0.0210
0.0653	-0.0269	-0.0045	0.0214
0.0652	-0.0266	-0.0047	0.0218
0.0652	-0.0264	-0.0048	0.0222
0.0651	-0.0262	-0.0049	0.0227
0.0651	-0.0260	-0.0050	0.0232
0.0650	-0.0257	-0.0052	0.0237
0.0650	-0.0255	-0.0053	0.0242
0.0649	-0.0253	-0.0055	0.0248
0.0648	-0.0250	-0.0056	0.0254
0.0648	-0.0247	-0.0057	0.0260
0.0647	-0.0245	-0.0059	0.0267
0.0647	-0.0242	-0.0060	0.0274
0.0646	-0.0239	-0.0062	0.0281
0.0646	-0.0237	-0.0063	0.0288
0.0645	-0.0234	-0.0065	0.0296
0.0644	-0.0231	-0.0066	0.0304
0.0644	-0.0228	-0.0068	0.0313
0.0643	-0.0224	-0.0069	0.0321
0.0642	-0.0221	-0.0071	0.0330
0.0641	-0.0218	-0.0072	0.0339
0.0641	-0.0214	-0.0074	0.0348
0.0640	-0.0211	-0.0075	0.0358
0.0639	-0.0207	-0.0077	0.0368
0.0638	-0.0203	-0.0079	0.0378
0.0638	-0.0200	-0.0080	0.0388
0.0637	-0.0196	-0.0082	0.0399
0.0636	-0.0192	-0.0083	0.0409
0.0635	-0.0187	-0.0085	0.0421
0.0634	-0.0183	-0.0086	0.0432
0.0633	-0.0179	-0.0088	0.0444
0.0633	-0.0174	-0.0090	0.0455
0.0632	-0.0170	-0.0091	0.0468
0.0631	-0.0165	-0.0093	0.0480
0.0630	-0.0160	-0.0095	0.0493
0.0629	-0.0155	-0.0096	0.0506
0.0628	-0.0150	-0.0098	0.0520
0.0627	-0.0145	-0.0100	0.0534
0.0626	-0.0139	-0.0102	0.0549
0.0625	-0.0134	-0.0105	0.0564
0.0624	-0.0128	-0.0107	0.0580
0.0623	-0.0122	-0.0110	0.0598
0.0622	-0.0116	-0.0113	0.0616
0.0620	-0.0110	-0.0116	0.0635
0.0619	-0.0103	-0.0120	0.0655
0.0618	-0.0097	-0.0124	0.0677
0.0617	-0.0090	-0.0128	0.0700
0.0615	-0.0083	-0.0133	0.0726
0.0614	-0.0075	-0.0139	0.0753
0.0613	-0.0068	-0.0145	0.0783
0.0611	-0.0060	-0.0152	0.0816

0.0610	-0.0051	-0.0161	0.0852
0.0608	-0.0043	-0.0171	0.0892
0.0606	-0.0033	-0.0182	0.0938
0.0604	-0.0024	-0.0196	0.0989
0.0602	-0.0014	-0.0212	0.1047
0.0600	-0.0003	-0.0231	0.1114
0.0598	0.0009	-0.0254	0.1191
0.0595	0.0021	-0.0282	0.1282
0.0592	0.0034	-0.0316	0.1389
0.0589	0.0049	-0.0360	0.1516
0.0585	0.0065	-0.0416	0.1667
0.0580	0.0082	-0.0488	0.1846
0.0575	0.0102	-0.0579	0.2053
0.0569	0.0123	-0.0694	0.2277
0.0561	0.0147	-0.0830	0.2479
0.0552	0.0173	-0.0967	0.2560
0.0542	0.0198	-0.1050	0.2364
0.0531	0.0219	-0.1018	0.1807
0.0522	0.0233	-0.0865	0.1013
0.0514	0.0239	-0.0657	0.0242
0.0509	0.0238	-0.0469	-0.0343
0.0505	0.0233	-0.0328	-0.0735
0.0502	0.0224	-0.0229	-0.0991
0.0500	0.0213	-0.0162	-0.1157
0.0499	0.0201	-0.0116	-0.1265
0.0498	0.0188	-0.0085	-0.1337
0.0497	0.0174	-0.0064	-0.1386
0.0496	0.0160	-0.0049	-0.1419
0.0496	0.0146	-0.0039	-0.1443
0.0496	0.0132	-0.0033	-0.1459
0.0495	0.0117	-0.0028	-0.1470
0.0495	0.0102	-0.0026	-0.1477
0.0495	0.0087	-0.0024	-0.1482
0.0494	0.0073	-0.0024	-0.1483
0.0494	0.0058	-0.0024	-0.1483
0.0494	0.0043	-0.0026	-0.1480
0.0494	0.0028	-0.0029	-0.1474
0.0493	0.0013	-0.0033	-0.1465
0.0493	-0.0001	-0.0038	-0.1451
0.0493	-0.0016	-0.0046	-0.1432
0.0492	-0.0030	-0.0057	-0.1404
0.0492	-0.0044	-0.0071	-0.1366
0.0491	-0.0057	-0.0091	-0.1313
0.0490	-0.0070	-0.0118	-0.1237
0.0488	-0.0082	-0.0156	-0.1129
0.0486	-0.0092	-0.0209	-0.0977
0.0484	-0.0101	-0.0283	-0.0760
0.0481	-0.0107	-0.0384	-0.0453
0.0476	-0.0110	-0.0516	-0.0031
0.0470	-0.0107	-0.0680	0.0527
0.0463	-0.0099	-0.0860	0.1202
0.0453	-0.0083	-0.1033	0.1935
0.0442	-0.0060	-0.1180	0.2633
0.0430	-0.0031	-0.1297	0.3224

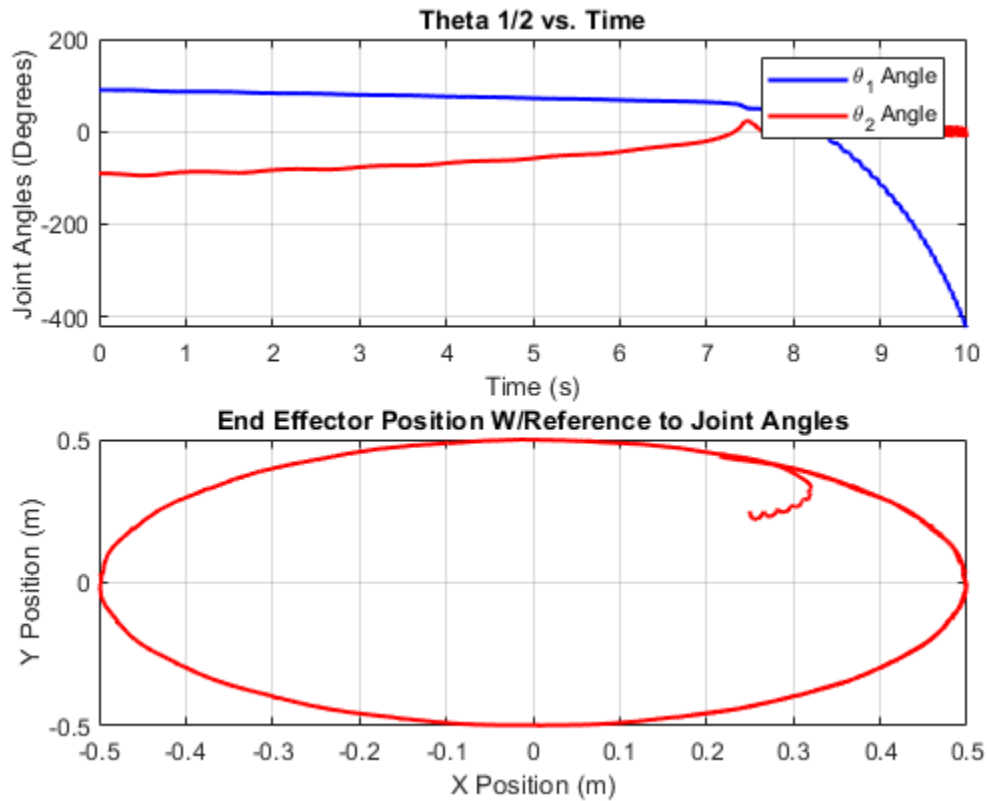
0.0416	0.0004	-0.1410	0.3695
0.0401	0.0043	-0.1545	0.4039
0.0385	0.0084	-0.1691	0.4110
0.0368	0.0123	-0.1734	0.3571
0.0351	0.0152	-0.1517	0.2219
0.0338	0.0166	-0.1105	0.0612
0.0329	0.0166	-0.0721	-0.0597
0.0323	0.0156	-0.0460	-0.1326
0.0320	0.0141	-0.0301	-0.1739
0.0317	0.0122	-0.0207	-0.1972
0.0315	0.0101	-0.0151	-0.2106
0.0314	0.0080	-0.0120	-0.2180
0.0313	0.0058	-0.0103	-0.2218
0.0312	0.0036	-0.0097	-0.2230
0.0311	0.0013	-0.0099	-0.2219
0.0310	-0.0009	-0.0111	-0.2184
0.0309	-0.0030	-0.0135	-0.2117
0.0307	-0.0051	-0.0176	-0.2003
0.0305	-0.0070	-0.0244	-0.1813
0.0302	-0.0087	-0.0356	-0.1494
0.0298	-0.0099	-0.0534	-0.0968
0.0291	-0.0105	-0.0806	-0.0116
0.0281	-0.0100	-0.1171	0.1137
0.0268	-0.0081	-0.1548	0.2641
0.0251	-0.0048	-0.1833	0.3995
0.0231	-0.0003	-0.2024	0.4901
0.0210	0.0048	-0.2193	0.5250
0.0188	0.0099	-0.2239	0.4603
0.0167	0.0136	-0.1878	0.2556
0.0151	0.0149	-0.1245	0.0228
0.0141	0.0143	-0.0736	-0.1300
0.0136	0.0126	-0.0441	-0.2094
0.0132	0.0102	-0.0285	-0.2489
0.0130	0.0076	-0.0205	-0.2682
0.0128	0.0049	-0.0166	-0.2772
0.0126	0.0021	-0.0156	-0.2790
0.0125	-0.0007	-0.0168	-0.2750
0.0123	-0.0034	-0.0207	-0.2639
0.0121	-0.0059	-0.0287	-0.2416
0.0117	-0.0081	-0.0437	-0.1990
0.0111	-0.0097	-0.0710	-0.1188
0.0102	-0.0103	-0.1164	0.0245
0.0088	-0.0090	-0.1753	0.2389
0.0067	-0.0055	-0.2246	0.4586
0.0043	-0.0001	-0.2521	0.5923
0.0017	0.0060	-0.2687	0.6054
-0.0009	0.0113	-0.2475	0.4196
-0.0030	0.0139	-0.1679	0.0956
-0.0043	0.0135	-0.0933	-0.1367
-0.0050	0.0115	-0.0521	-0.2488
-0.0054	0.0088	-0.0324	-0.2988
-0.0057	0.0057	-0.0236	-0.3201
-0.0059	0.0024	-0.0207	-0.3264
-0.0061	-0.0008	-0.0219	-0.3219

-0.0063	-0.0040	-0.0280	-0.3046
-0.0067	-0.0069	-0.0419	-0.2656
-0.0072	-0.0091	-0.0706	-0.1829
-0.0082	-0.0102	-0.1252	-0.0151
-0.0098	-0.0091	-0.2043	0.2663
-0.0122	-0.0049	-0.2691	0.5563
-0.0151	0.0016	-0.2994	0.6950
-0.0181	0.0083	-0.3035	0.6114
-0.0209	0.0128	-0.2281	0.2427
-0.0226	0.0133	-0.1237	-0.1046
-0.0235	0.0113	-0.0641	-0.2709
-0.0240	0.0082	-0.0377	-0.3386
-0.0243	0.0047	-0.0272	-0.3640
-0.0246	0.0010	-0.0249	-0.3684
-0.0248	-0.0027	-0.0291	-0.3557
-0.0252	-0.0060	-0.0424	-0.3181
-0.0257	-0.0088	-0.0738	-0.2286
-0.0268	-0.0102	-0.1399	-0.0269
-0.0287	-0.0088	-0.2408	0.3336
-0.0315	-0.0036	-0.3145	0.6758
-0.0348	0.0039	-0.3425	0.7735
-0.0382	0.0106	-0.3086	0.5053
-0.0406	0.0132	-0.1808	0.0172
-0.0419	0.0117	-0.0867	-0.2596
-0.0425	0.0085	-0.0464	-0.3654
-0.0429	0.0047	-0.0314	-0.4020
-0.0432	0.0006	-0.0284	-0.4078
-0.0435	-0.0034	-0.0346	-0.3892
-0.0439	-0.0071	-0.0552	-0.3315
-0.0447	-0.0097	-0.1066	-0.1826
-0.0463	-0.0101	-0.2119	0.1584
-0.0490	-0.0061	-0.3259	0.6299
-0.0525	0.0016	-0.3720	0.8523
-0.0563	0.0095	-0.3535	0.6347
-0.0591	0.0130	-0.2083	0.0534
-0.0606	0.0115	-0.0937	-0.2870
-0.0612	0.0080	-0.0481	-0.4065
-0.0616	0.0037	-0.0329	-0.4432
-0.0619	-0.0008	-0.0320	-0.4431
-0.0623	-0.0051	-0.0443	-0.4081
-0.0629	-0.0087	-0.0819	-0.3018
-0.0641	-0.0105	-0.1767	-0.0139
-0.0666	-0.0080	-0.3238	0.5352
-0.0703	-0.0004	-0.3983	0.9102
-0.0744	0.0085	-0.3958	0.7650
-0.0776	0.0129	-0.2368	0.0958
-0.0792	0.0114	-0.0998	-0.3149
-0.0799	0.0075	-0.0490	-0.4475
-0.0803	0.0028	-0.0341	-0.4834
-0.0807	-0.0020	-0.0359	-0.4758
-0.0811	-0.0066	-0.0564	-0.4180
-0.0819	-0.0100	-0.1203	-0.2350
-0.0838	-0.0102	-0.2703	0.2563
-0.0873	-0.0043	-0.4095	0.8767

-0.0916	0.0055	-0.4417	0.9687
-0.0956	0.0124	-0.3134	0.3110
-0.0977	0.0121	-0.1271	-0.2834
-0.0986	0.0081	-0.0560	-0.4726
-0.0990	0.0031	-0.0361	-0.5210
-0.0993	-0.0022	-0.0375	-0.5141
-0.0998	-0.0070	-0.0619	-0.4455
-0.1008	-0.0105	-0.1440	-0.2087
-0.1031	-0.0098	-0.3324	0.4362
-0.1072	-0.0018	-0.4572	1.0490
-0.1119	0.0086	-0.4566	0.8905
-0.1154	0.0131	-0.2370	-0.0027
-0.1169	0.0105	-0.0868	-0.4359
-0.1175	0.0054	-0.0431	-0.5469
-0.1179	-0.0002	-0.0358	-0.5625
-0.1183	-0.0056	-0.0516	-0.5172
-0.1191	-0.0101	-0.1178	-0.3305
-0.1211	-0.0108	-0.3093	0.2883
-0.1252	-0.0035	-0.4826	1.0887
-0.1302	0.0080	-0.4973	1.0174
-0.1342	0.0132	-0.2548	0.0030
-0.1357	0.0103	-0.0865	-0.4818
-0.1363	0.0048	-0.0424	-0.5932
-0.1367	-0.0013	-0.0378	-0.6013
-0.1372	-0.0070	-0.0629	-0.5308
-0.1382	-0.0112	-0.1688	-0.2276
-0.1411	-0.0094	-0.4257	0.6898
-0.1461	0.0014	-0.5361	1.2815
-0.1513	0.0120	-0.4335	0.5879
-0.1540	0.0123	-0.1453	-0.3702
-0.1549	0.0071	-0.0541	-0.6106
-0.1553	0.0007	-0.0372	-0.6503
-0.1558	-0.0056	-0.0527	-0.6055
-0.1566	-0.0108	-0.1386	-0.3650
-0.1592	-0.0106	-0.4111	0.5525
-0.1643	0.0001	-0.5676	1.3746
-0.1699	0.0119	-0.4769	0.6918
-0.1729	0.0124	-0.1482	-0.4120
-0.1738	0.0067	-0.0524	-0.6637
-0.1742	-0.0002	-0.0380	-0.6966
-0.1746	-0.0070	-0.0627	-0.6272
-0.1758	-0.0118	-0.1972	-0.2437
-0.1794	-0.0085	-0.5332	1.0225
-0.1853	0.0053	-0.6187	1.4424
-0.1905	0.0137	-0.3227	0.0540
-0.1922	0.0098	-0.0850	-0.6333
-0.1928	0.0028	-0.0409	-0.7434
-0.1932	-0.0046	-0.0495	-0.7168
-0.1940	-0.0109	-0.1402	-0.4660
-0.1970	-0.0107	-0.4922	0.7282
-0.2030	0.0025	-0.6529	1.5971
-0.2089	0.0136	-0.4060	0.2675
-0.2110	0.0103	-0.0961	-0.6601
-0.2117	0.0028	-0.0424	-0.7951

-0.2121	-0.0051	-0.0533	-0.7624
-0.2130	-0.0115	-0.1729	-0.4304
-0.2167	-0.0093	-0.5945	1.0996
-0.2235	0.0063	-0.7015	1.6132
-0.2288	0.0137	-0.2751	-0.2208
-0.2302	0.0077	-0.0668	-0.7946
-0.2307	-0.0007	-0.0433	-0.8508
-0.2313	-0.0088	-0.0930	-0.7151
-0.2334	-0.0124	-0.4203	0.2880
-0.2397	0.0000	-0.7303	1.8184
-0.2465	0.0136	-0.4687	0.3417
-0.2488	0.0096	-0.0937	-0.7826
-0.2494	0.0009	-0.0445	-0.9049
-0.2500	-0.0078	-0.0819	-0.8020
-0.2519	-0.0127	-0.3952	0.1324
-0.2584	-0.0005	-0.7744	1.9291
-0.2655	0.0137	-0.4744	0.2816
-0.2678	0.0089	-0.0877	-0.8633
-0.2684	-0.0005	-0.0477	-0.9621
-0.2690	-0.0096	-0.1174	-0.7726
-0.2722	-0.0113	-0.6233	0.8879
-0.2799	0.0058	-0.8210	1.9069
-0.2857	0.0131	-0.2558	-0.4510
-0.2870	0.0050	-0.0600	-0.9768
-0.2875	-0.0049	-0.0644	-0.9607
-0.2889	-0.0124	-0.2961	-0.3074
-0.2952	-0.0030	-0.8437	2.0435
-0.3031	0.0135	-0.5453	0.4029
-0.3056	0.0082	-0.0894	-0.9587
-0.3062	-0.0021	-0.0548	-1.0428
-0.3072	-0.0113	-0.1963	-0.6572
-0.3124	-0.0068	-0.8570	1.8838
-0.3211	0.0126	-0.7073	0.9290
-0.3244	0.0090	-0.1063	-0.9797
-0.3250	-0.0017	-0.0572	-1.1014
-0.3261	-0.0115	-0.2167	-0.6663
-0.3319	-0.0053	-0.9229	2.1323
-0.3408	0.0134	-0.6044	0.4474
-0.3434	0.0071	-0.0868	-1.0969
-0.3440	-0.0044	-0.0721	-1.1298
-0.3458	-0.0127	-0.4256	-0.1130
-0.3541	0.0028	-1.0034	2.4569
-0.3613	0.0126	-0.2693	-0.6684
-0.3625	0.0020	-0.0632	-1.2153
-0.3634	-0.0096	-0.1535	-0.9710
-0.3685	-0.0079	-0.9702	2.0083
-0.3783	0.0131	-0.7030	0.6368
-0.3811	0.0063	-0.0895	-1.2191
-0.3819	-0.0062	-0.0967	-1.1940
-0.3851	-0.0117	-0.7716	0.9405
-0.3954	0.0106	-0.9940	1.7695
-0.3998	0.0083	-0.1192	-1.2021
-0.4006	-0.0047	-0.0850	-1.2844
-0.4033	-0.0124	-0.6804	0.5189

-0.4137	0.0096	-1.0770	2.0836
-0.4187	0.0084	-0.1269	-1.2488
-0.4195	-0.0052	-0.0928	-1.3304
-0.4227	-0.0119	-0.8308	0.9879



Define robot parameters

```
L1 = .25;
L2 = .25;
r1 = .125;
r2 = .125;
m1 = .5;
m2 = .5;
g = 9.81;
I1 = (m1*L1^2)/12;
I2 = (m2*L2^2)/12;
b1 = 10^(-1);
b2 = 10^(-1);
tau = [0; 0];    % Input torques (0 for both joints)

% Initial conditions: [theta1, theta2, theta1_dot, theta2_dot]
initial_conditions = [pi/2; -pi/2; 0; 0];

% Time span for simulation
%tspan = [0 10]; % 10 seconds
dt = .01;
```

```

tspan = 0:dt:10;

% Define the system of differential equations inline
dynamics = @(t, x) [
    % Extract state variables
    x(3); % theta1_dot
    x(4); % theta2_dot

    % Inertia matrix M(theta)
    (I1 + I2 + m1*r1^2 + m2*(L1^2 + r2^2 + 2*L1*r2*cos(x(2)))) \ (tau(1) -
    (-m2*L1*r2*sin(x(2))*x(4)*x(3) - m2*L1*r2*sin(x(2))*(x(3) + x(4)) - (m1*r1 +
    m2*L1)*g*cos(x(1)) - m2*r2*g*cos(x(1) + x(2)))));

    (I2 + m2*r2^2) \ (tau(2) - m2*L1*r2*sin(x(2))*x(3) - m2*r2*g*cos(x(1) +
    x(2)))
];

% Solve using ode45
[t, x] = ode45(dynamics, tspan, initial_conditions)

% Plot joint angles over time
figure;
subplot(2,1,1);
plot(t, x(:, 1), 'r-', 'LineWidth', 1.5); hold on;
plot(t, x(:, 2), 'b-', 'LineWidth', 1.5);
xlabel('Time (s)');
ylabel('Joint Angles (rad)');
legend('\theta_1', '\theta_2');
title('Joint Angles vs. Time');

% Calculate end-effector position
x_ee = L1 * cos(x(:, 1)) + L2 * cos(x(:, 1) + x(:, 2));
y_ee = L1 * sin(x(:, 1)) + L2 * sin(x(:, 1) + x(:, 2));

% Plot end-effector trajectory
subplot(2,1,2);
plot(x_ee, y_ee, 'k-', 'LineWidth', 1.5);
xlabel('X Position (m)');
ylabel('Y Position (m)');
title('End-Effector Trajectory');
axis equal;

t =
    0
    0.0100
    0.0200
    0.0300
    0.0400
    0.0500
    0.0600
    0.0700

```

0.0800
0.0900
0.1000
0.1100
0.1200
0.1300
0.1400
0.1500
0.1600
0.1700
0.1800
0.1900
0.2000
0.2100
0.2200
0.2300
0.2400
0.2500
0.2600
0.2700
0.2800
0.2900
0.3000
0.3100
0.3200
0.3300
0.3400
0.3500
0.3600
0.3700
0.3800
0.3900
0.4000
0.4100
0.4200
0.4300
0.4400
0.4500
0.4600
0.4700
0.4800
0.4900
0.5000
0.5100
0.5200
0.5300
0.5400
0.5500
0.5600
0.5700
0.5800
0.5900
0.6000
0.6100

0.6200
0.6300
0.6400
0.6500
0.6600
0.6700
0.6800
0.6900
0.7000
0.7100
0.7200
0.7300
0.7400
0.7500
0.7600
0.7700
0.7800
0.7900
0.8000
0.8100
0.8200
0.8300
0.8400
0.8500
0.8600
0.8700
0.8800
0.8900
0.9000
0.9100
0.9200
0.9300
0.9400
0.9500
0.9600
0.9700
0.9800
0.9900
1.0000
1.0100
1.0200
1.0300
1.0400
1.0500
1.0600
1.0700
1.0800
1.0900
1.1000
1.1100
1.1200
1.1300
1.1400
1.1500

1.1600
1.1700
1.1800
1.1900
1.2000
1.2100
1.2200
1.2300
1.2400
1.2500
1.2600
1.2700
1.2800
1.2900
1.3000
1.3100
1.3200
1.3300
1.3400
1.3500
1.3600
1.3700
1.3800
1.3900
1.4000
1.4100
1.4200
1.4300
1.4400
1.4500
1.4600
1.4700
1.4800
1.4900
1.5000
1.5100
1.5200
1.5300
1.5400
1.5500
1.5600
1.5700
1.5800
1.5900
1.6000
1.6100
1.6200
1.6300
1.6400
1.6500
1.6600
1.6700
1.6800
1.6900

1.7000
1.7100
1.7200
1.7300
1.7400
1.7500
1.7600
1.7700
1.7800
1.7900
1.8000
1.8100
1.8200
1.8300
1.8400
1.8500
1.8600
1.8700
1.8800
1.8900
1.9000
1.9100
1.9200
1.9300
1.9400
1.9500
1.9600
1.9700
1.9800
1.9900
2.0000
2.0100
2.0200
2.0300
2.0400
2.0500
2.0600
2.0700
2.0800
2.0900
2.1000
2.1100
2.1200
2.1300
2.1400
2.1500
2.1600
2.1700
2.1800
2.1900
2.2000
2.2100
2.2200
2.2300

2.2400
2.2500
2.2600
2.2700
2.2800
2.2900
2.3000
2.3100
2.3200
2.3300
2.3400
2.3500
2.3600
2.3700
2.3800
2.3900
2.4000
2.4100
2.4200
2.4300
2.4400
2.4500
2.4600
2.4700
2.4800
2.4900
2.5000
2.5100
2.5200
2.5300
2.5400
2.5500
2.5600
2.5700
2.5800
2.5900
2.6000
2.6100
2.6200
2.6300
2.6400
2.6500
2.6600
2.6700
2.6800
2.6900
2.7000
2.7100
2.7200
2.7300
2.7400
2.7500
2.7600
2.7700

2.7800
2.7900
2.8000
2.8100
2.8200
2.8300
2.8400
2.8500
2.8600
2.8700
2.8800
2.8900
2.9000
2.9100
2.9200
2.9300
2.9400
2.9500
2.9600
2.9700
2.9800
2.9900
3.0000
3.0100
3.0200
3.0300
3.0400
3.0500
3.0600
3.0700
3.0800
3.0900
3.1000
3.1100
3.1200
3.1300
3.1400
3.1500
3.1600
3.1700
3.1800
3.1900
3.2000
3.2100
3.2200
3.2300
3.2400
3.2500
3.2600
3.2700
3.2800
3.2900
3.3000
3.3100

3.3200
3.3300
3.3400
3.3500
3.3600
3.3700
3.3800
3.3900
3.4000
3.4100
3.4200
3.4300
3.4400
3.4500
3.4600
3.4700
3.4800
3.4900
3.5000
3.5100
3.5200
3.5300
3.5400
3.5500
3.5600
3.5700
3.5800
3.5900
3.6000
3.6100
3.6200
3.6300
3.6400
3.6500
3.6600
3.6700
3.6800
3.6900
3.7000
3.7100
3.7200
3.7300
3.7400
3.7500
3.7600
3.7700
3.7800
3.7900
3.8000
3.8100
3.8200
3.8300
3.8400
3.8500

3.8600
3.8700
3.8800
3.8900
3.9000
3.9100
3.9200
3.9300
3.9400
3.9500
3.9600
3.9700
3.9800
3.9900
4.0000
4.0100
4.0200
4.0300
4.0400
4.0500
4.0600
4.0700
4.0800
4.0900
4.1000
4.1100
4.1200
4.1300
4.1400
4.1500
4.1600
4.1700
4.1800
4.1900
4.2000
4.2100
4.2200
4.2300
4.2400
4.2500
4.2600
4.2700
4.2800
4.2900
4.3000
4.3100
4.3200
4.3300
4.3400
4.3500
4.3600
4.3700
4.3800
4.3900

4.4000
4.4100
4.4200
4.4300
4.4400
4.4500
4.4600
4.4700
4.4800
4.4900
4.5000
4.5100
4.5200
4.5300
4.5400
4.5500
4.5600
4.5700
4.5800
4.5900
4.6000
4.6100
4.6200
4.6300
4.6400
4.6500
4.6600
4.6700
4.6800
4.6900
4.7000
4.7100
4.7200
4.7300
4.7400
4.7500
4.7600
4.7700
4.7800
4.7900
4.8000
4.8100
4.8200
4.8300
4.8400
4.8500
4.8600
4.8700
4.8800
4.8900
4.9000
4.9100
4.9200
4.9300

4.9400
4.9500
4.9600
4.9700
4.9800
4.9900
5.0000
5.0100
5.0200
5.0300
5.0400
5.0500
5.0600
5.0700
5.0800
5.0900
5.1000
5.1100
5.1200
5.1300
5.1400
5.1500
5.1600
5.1700
5.1800
5.1900
5.2000
5.2100
5.2200
5.2300
5.2400
5.2500
5.2600
5.2700
5.2800
5.2900
5.3000
5.3100
5.3200
5.3300
5.3400
5.3500
5.3600
5.3700
5.3800
5.3900
5.4000
5.4100
5.4200
5.4300
5.4400
5.4500
5.4600
5.4700

5.4800
5.4900
5.5000
5.5100
5.5200
5.5300
5.5400
5.5500
5.5600
5.5700
5.5800
5.5900
5.6000
5.6100
5.6200
5.6300
5.6400
5.6500
5.6600
5.6700
5.6800
5.6900
5.7000
5.7100
5.7200
5.7300
5.7400
5.7500
5.7600
5.7700
5.7800
5.7900
5.8000
5.8100
5.8200
5.8300
5.8400
5.8500
5.8600
5.8700
5.8800
5.8900
5.9000
5.9100
5.9200
5.9300
5.9400
5.9500
5.9600
5.9700
5.9800
5.9900
6.0000
6.0100

6.0200
6.0300
6.0400
6.0500
6.0600
6.0700
6.0800
6.0900
6.1000
6.1100
6.1200
6.1300
6.1400
6.1500
6.1600
6.1700
6.1800
6.1900
6.2000
6.2100
6.2200
6.2300
6.2400
6.2500
6.2600
6.2700
6.2800
6.2900
6.3000
6.3100
6.3200
6.3300
6.3400
6.3500
6.3600
6.3700
6.3800
6.3900
6.4000
6.4100
6.4200
6.4300
6.4400
6.4500
6.4600
6.4700
6.4800
6.4900
6.5000
6.5100
6.5200
6.5300
6.5400
6.5500

6.5600
6.5700
6.5800
6.5900
6.6000
6.6100
6.6200
6.6300
6.6400
6.6500
6.6600
6.6700
6.6800
6.6900
6.7000
6.7100
6.7200
6.7300
6.7400
6.7500
6.7600
6.7700
6.7800
6.7900
6.8000
6.8100
6.8200
6.8300
6.8400
6.8500
6.8600
6.8700
6.8800
6.8900
6.9000
6.9100
6.9200
6.9300
6.9400
6.9500
6.9600
6.9700
6.9800
6.9900
7.0000
7.0100
7.0200
7.0300
7.0400
7.0500
7.0600
7.0700
7.0800
7.0900

7.1000
7.1100
7.1200
7.1300
7.1400
7.1500
7.1600
7.1700
7.1800
7.1900
7.2000
7.2100
7.2200
7.2300
7.2400
7.2500
7.2600
7.2700
7.2800
7.2900
7.3000
7.3100
7.3200
7.3300
7.3400
7.3500
7.3600
7.3700
7.3800
7.3900
7.4000
7.4100
7.4200
7.4300
7.4400
7.4500
7.4600
7.4700
7.4800
7.4900
7.5000
7.5100
7.5200
7.5300
7.5400
7.5500
7.5600
7.5700
7.5800
7.5900
7.6000
7.6100
7.6200
7.6300

7.6400
7.6500
7.6600
7.6700
7.6800
7.6900
7.7000
7.7100
7.7200
7.7300
7.7400
7.7500
7.7600
7.7700
7.7800
7.7900
7.8000
7.8100
7.8200
7.8300
7.8400
7.8500
7.8600
7.8700
7.8800
7.8900
7.9000
7.9100
7.9200
7.9300
7.9400
7.9500
7.9600
7.9700
7.9800
7.9900
8.0000
8.0100
8.0200
8.0300
8.0400
8.0500
8.0600
8.0700
8.0800
8.0900
8.1000
8.1100
8.1200
8.1300
8.1400
8.1500
8.1600
8.1700

8.1800
8.1900
8.2000
8.2100
8.2200
8.2300
8.2400
8.2500
8.2600
8.2700
8.2800
8.2900
8.3000
8.3100
8.3200
8.3300
8.3400
8.3500
8.3600
8.3700
8.3800
8.3900
8.4000
8.4100
8.4200
8.4300
8.4400
8.4500
8.4600
8.4700
8.4800
8.4900
8.5000
8.5100
8.5200
8.5300
8.5400
8.5500
8.5600
8.5700
8.5800
8.5900
8.6000
8.6100
8.6200
8.6300
8.6400
8.6500
8.6600
8.6700
8.6800
8.6900
8.7000
8.7100

8.7200
8.7300
8.7400
8.7500
8.7600
8.7700
8.7800
8.7900
8.8000
8.8100
8.8200
8.8300
8.8400
8.8500
8.8600
8.8700
8.8800
8.8900
8.9000
8.9100
8.9200
8.9300
8.9400
8.9500
8.9600
8.9700
8.9800
8.9900
9.0000
9.0100
9.0200
9.0300
9.0400
9.0500
9.0600
9.0700
9.0800
9.0900
9.1000
9.1100
9.1200
9.1300
9.1400
9.1500
9.1600
9.1700
9.1800
9.1900
9.2000
9.2100
9.2200
9.2300
9.2400
9.2500

9.2600
9.2700
9.2800
9.2900
9.3000
9.3100
9.3200
9.3300
9.3400
9.3500
9.3600
9.3700
9.3800
9.3900
9.4000
9.4100
9.4200
9.4300
9.4400
9.4500
9.4600
9.4700
9.4800
9.4900
9.5000
9.5100
9.5200
9.5300
9.5400
9.5500
9.5600
9.5700
9.5800
9.5900
9.6000
9.6100
9.6200
9.6300
9.6400
9.6500
9.6600
9.6700
9.6800
9.6900
9.7000
9.7100
9.7200
9.7300
9.7400
9.7500
9.7600
9.7700
9.7800
9.7900

9.8000
 9.8100
 9.8200
 9.8300
 9.8400
 9.8500
 9.8600
 9.8700
 9.8800
 9.8900
 9.9000
 9.9100
 9.9200
 9.9300
 9.9400
 9.9500
 9.9600
 9.9700
 9.9800
 9.9900
 10.0000

x =

1.5708	-1.5708	0	0
1.5714	-1.5737	0.1185	-0.5877
1.5732	-1.5825	0.2388	-1.1736
1.5762	-1.5972	0.3614	-1.7576
1.5804	-1.6177	0.4867	-2.3397
1.5859	-1.6440	0.6151	-2.9194
1.5927	-1.6761	0.7471	-3.4963
1.6009	-1.7139	0.8831	-4.0700
1.6103	-1.7574	1.0216	-4.6398
1.6211	-1.8067	1.1646	-5.2047
1.6335	-1.8615	1.3139	-5.7632
1.6474	-1.9219	1.4704	-6.3136
1.6630	-1.9877	1.6341	-6.8543
1.6803	-2.0590	1.8036	-7.3834
1.6993	-2.1354	1.9769	-7.8989
1.7201	-2.2169	2.1506	-8.3988
1.7424	-2.3033	2.3207	-8.8808
1.7664	-2.3945	2.4817	-9.3426
1.7919	-2.4901	2.6274	-9.7818
1.8187	-2.5900	2.7505	-10.1958
1.8468	-2.6939	2.8424	-10.5817
1.8756	-2.8015	2.8852	-10.9368
1.9044	-2.9125	2.8609	-11.2585
1.9324	-3.0266	2.7586	-11.5433
1.9590	-3.1433	2.5743	-11.7873
1.9835	-3.2622	2.3113	-11.9857
2.0050	-3.3828	1.9799	-12.1335
2.0230	-3.5046	1.5972	-12.2247
2.0369	-3.6271	1.1861	-12.2542

2.0466	-3.7495	0.7657	-12.2178
2.0522	-3.8712	0.3510	-12.1122
2.0538	-3.9915	-0.0469	-11.9361
2.0515	-4.1097	-0.4203	-11.6898
2.0455	-4.2250	-0.7654	-11.3756
2.0362	-4.3370	-1.0818	-10.9977
2.0239	-4.4449	-1.3729	-10.5621
2.0088	-4.5481	-1.6416	-10.0756
1.9911	-4.6462	-1.8892	-9.5461
1.9711	-4.7388	-2.1179	-8.9814
1.9488	-4.8257	-2.3297	-8.3896
1.9245	-4.9066	-2.5261	-7.7780
1.8984	-4.9813	-2.7084	-7.1542
1.8704	-5.0497	-2.8777	-6.5251
1.8409	-5.1118	-3.0347	-5.8975
1.8098	-5.1676	-3.1799	-5.2757
1.7773	-5.2173	-3.3137	-4.6637
1.7435	-5.2609	-3.4362	-4.0646
1.7086	-5.2987	-3.5477	-3.4811
1.6726	-5.3306	-3.6482	-2.9151
1.6357	-5.3571	-3.7380	-2.3679
1.5979	-5.3781	-3.8170	-1.8404
1.5594	-5.3939	-3.8852	-1.3327
1.5202	-5.4048	-3.9428	-0.8444
1.4806	-5.4109	-3.9897	-0.3746
1.4405	-5.4124	-4.0260	0.0773
1.4001	-5.4095	-4.0520	0.5127
1.3594	-5.4023	-4.0679	0.9326
1.3187	-5.3910	-4.0739	1.3386
1.2780	-5.3756	-4.0703	1.7322
1.2374	-5.3563	-4.0571	2.1149
1.1969	-5.3333	-4.0348	2.4886
1.1567	-5.3065	-4.0034	2.8550
1.1169	-5.2761	-3.9633	3.2161
1.0775	-5.2421	-3.9147	3.5741
1.0386	-5.2046	-3.8577	3.9309
1.0003	-5.1635	-3.7926	4.2883
0.9628	-5.1189	-3.7199	4.6484
0.9259	-5.0706	-3.6397	5.0133
0.8900	-5.0186	-3.5521	5.3848
0.8549	-4.9628	-3.4573	5.7650
0.8208	-4.9032	-3.3548	6.1556
0.7878	-4.8397	-3.2445	6.5583
0.7560	-4.7720	-3.1256	6.9750
0.7254	-4.7001	-2.9976	7.4072
0.6961	-4.6238	-2.8595	7.8565
0.6682	-4.5429	-2.7103	8.3244
0.6420	-4.4572	-2.5480	8.8114
0.6173	-4.3666	-2.3702	9.3182
0.5946	-4.2708	-2.1736	9.8448
0.5739	-4.1696	-1.9541	10.3902
0.5556	-4.0629	-1.7070	10.9527
0.5399	-3.9505	-1.4264	11.5295
0.5272	-3.8323	-1.1056	12.1169

0.5179	-3.7082	-0.7369	12.7097
0.5125	-3.5781	-0.3179	13.3011
0.5116	-3.4422	0.1452	13.8832
0.5156	-3.3005	0.6401	14.4465
0.5246	-3.1533	1.1484	14.9794
0.5386	-3.0010	1.6454	15.4689
0.5574	-2.8442	2.1003	15.9001
0.5803	-2.6833	2.4794	16.2572
0.6067	-2.5193	2.7795	16.5277
0.6357	-2.3531	3.0141	16.6986
0.6668	-2.1857	3.1966	16.7618
0.6995	-2.0183	3.3399	16.7142
0.7335	-1.8518	3.4569	16.5581
0.7686	-1.6874	3.5604	16.3009
0.8047	-1.5261	3.6592	15.9531
0.8418	-1.3688	3.7565	15.5309
0.8798	-1.2159	3.8543	15.0528
0.9189	-1.0680	3.9540	14.5366
0.9590	-0.9252	4.0562	14.0003
1.0000	-0.7879	4.1606	13.4614
1.0422	-0.6558	4.2663	12.9377
1.0853	-0.5288	4.3714	12.4463
1.1296	-0.4066	4.4737	12.0038
1.1748	-0.2886	4.5722	11.6197
1.2210	-0.1740	4.6658	11.3021
1.2681	-0.0623	4.7533	11.0580
1.3160	0.0475	4.8338	10.8927
1.3647	0.1560	4.9068	10.8097
1.4141	0.2640	4.9721	10.8108
1.4641	0.3724	5.0298	10.8960
1.5147	0.4821	5.0802	11.0635
1.5657	0.5939	5.1239	11.3099
1.6172	0.7085	5.1624	11.6288
1.6690	0.8266	5.1973	12.0123
1.7211	0.9489	5.2305	12.4500
1.7736	1.0758	5.2640	12.9288
1.8264	1.2076	5.2998	13.4334
1.8796	1.3446	5.3399	13.9459
1.9332	1.4865	5.3864	14.4459
1.9873	1.6334	5.4411	14.9117
2.0420	1.7847	5.5039	15.3234
2.0974	1.9397	5.5709	15.6583
2.1535	2.0975	5.6341	15.8981
2.2102	2.2571	5.6807	16.0304
2.2671	2.4175	5.6933	16.0480
2.3239	2.5776	5.6501	15.9495
2.3797	2.7362	5.5245	15.7391
2.4339	2.8922	5.2848	15.4269
2.4849	3.0444	4.9164	15.0290
2.5318	3.1923	4.4510	14.5627
2.5737	3.3354	3.9223	14.0450
2.6102	3.4731	3.3603	13.4921
2.6410	3.6052	2.7913	12.9200
2.6661	3.7316	2.2384	12.3444

2.6858	3.8523	1.7208	11.7804
2.7006	3.9674	1.2481	11.2379
2.7109	4.0772	0.8153	10.7194
2.7171	4.1819	0.4185	10.2288
2.7194	4.2819	0.0539	9.7694
2.7182	4.3774	-0.2824	9.3431
2.7138	4.4688	-0.5940	8.9510
2.7064	4.5565	-0.8844	8.5932
2.6962	4.6408	-1.1570	8.2686
2.6833	4.7221	-1.4142	7.9762
2.6680	4.8006	-1.6578	7.7146
2.6502	4.8767	-1.8892	7.4826
2.6302	4.9505	-2.1100	7.2788
2.6080	5.0224	-2.3211	7.1019
2.5837	5.0926	-2.5236	6.9506
2.5575	5.1614	-2.7180	6.8235
2.5295	5.2289	-2.9049	6.7192
2.4995	5.2956	-3.0845	6.6362
2.4678	5.3616	-3.2567	6.5732
2.4344	5.4271	-3.4221	6.5292
2.3994	5.4923	-3.5809	6.5038
2.3628	5.5574	-3.7333	6.4964
2.3247	5.6224	-3.8795	6.5066
2.2852	5.6876	-4.0197	6.5341
2.2444	5.7531	-4.1540	6.5786
2.2022	5.8192	-4.2826	6.6400
2.1587	5.8859	-4.4057	6.7181
2.1141	5.9535	-4.5232	6.8130
2.0683	6.0222	-4.6355	6.9247
2.0214	6.0920	-4.7426	7.0533
1.9735	6.1633	-4.8451	7.1995
1.9245	6.2361	-4.9432	7.3640
1.8746	6.3107	-5.0371	7.5477
1.8238	6.3872	-5.1273	7.7513
1.7721	6.4658	-5.2141	7.9757
1.7195	6.5468	-5.2982	8.2218
1.6661	6.6303	-5.3803	8.4905
1.6119	6.7166	-5.4611	8.7826
1.5569	6.8060	-5.5416	9.0990
1.5011	6.8987	-5.6226	9.4406
1.4445	6.9949	-5.7053	9.8084
1.3870	7.0949	-5.7910	10.2034
1.3286	7.1990	-5.8805	10.6261
1.2694	7.3075	-5.9757	11.0775
1.2091	7.4206	-6.0787	11.5580
1.1477	7.5388	-6.1910	12.0677
1.0852	7.6621	-6.3140	12.6057
1.0214	7.7910	-6.4486	13.1710
0.9562	7.9256	-6.5954	13.7616
0.8895	8.0663	-6.7544	14.3751
0.8211	8.2132	-6.9294	15.0086
0.7508	8.3665	-7.1196	15.6579
0.6787	8.5263	-7.2915	16.3160
0.6052	8.6928	-7.4102	16.9754

0.5308	8.8658	-7.4420	17.6280
0.4568	9.0453	-7.3544	18.2656
0.3843	9.2311	-7.1163	18.8792
0.3150	9.4228	-6.6974	19.4597
0.2510	9.6201	-6.0702	19.9975
0.1942	9.8226	-5.2975	20.4840
0.1452	10.0296	-4.5001	20.9100
0.1039	10.2405	-3.7522	21.2647
0.0698	10.4546	-3.0934	21.5370
0.0417	10.6710	-2.5288	21.7158
0.0189	10.8886	-2.0472	21.7914
0.0006	11.1065	-1.6324	21.7572
-0.0139	11.3234	-1.2685	21.6119
-0.0249	11.5383	-0.9410	21.3592
-0.0328	11.7502	-0.6379	21.0083
-0.0377	11.9582	-0.3490	20.5723
-0.0398	12.1615	-0.0666	20.0685
-0.0390	12.3594	0.2162	19.5160
-0.0354	12.5517	0.5050	18.9350
-0.0289	12.7381	0.8044	18.3468
-0.0193	12.9187	1.1186	17.7719
-0.0065	13.0936	1.4512	17.2287
0.0098	13.2634	1.8061	16.7343
0.0297	13.4285	2.1874	16.3035
0.0536	13.5897	2.5991	15.9491
0.0818	13.7478	3.0458	15.6820
0.1147	13.9037	3.5330	15.5105
0.1526	14.0583	4.0676	15.4412
0.1962	14.2129	4.6568	15.4773
0.2460	14.3683	5.3085	15.6184
0.3026	14.5256	6.0308	15.8609
0.3668	14.6858	6.8315	16.1971
0.4392	14.8497	7.7111	16.6129
0.5210	15.0182	8.6596	17.0881
0.6127	15.1917	9.6355	17.5963
0.7140	15.3702	10.5636	18.1054
0.8236	15.5536	11.3346	18.5771
0.9396	15.7415	11.8055	18.9681
1.0584	15.9326	11.8879	19.2452
1.1764	16.1258	11.6520	19.3801
1.2907	16.3196	11.1870	19.3596
1.3996	16.5124	10.5837	19.1887
1.5021	16.7030	9.9346	18.8912
1.5984	16.8901	9.3214	18.5036
1.6887	17.0729	8.7610	18.0604
1.7738	17.2512	8.2551	17.6013
1.8540	17.4250	7.8025	17.1619
1.9300	17.5947	7.3984	16.7730
2.0021	17.7607	7.0343	16.4606
2.0708	17.9241	6.6998	16.2452
2.1362	18.0857	6.3900	16.1389
2.1987	18.2469	6.1018	16.1482
2.2583	18.4089	5.8328	16.2740
2.3154	18.5729	5.5810	16.5121

2.3700	18.7398	5.3458	16.8529
2.4223	18.9106	5.1268	17.2816
2.4726	19.0859	4.9248	17.7780
2.5209	19.2663	4.7412	18.3166
2.5674	19.4522	4.5772	18.8697
2.6124	19.6438	4.4339	19.4121
2.6560	19.8405	4.3166	19.9071
2.6988	20.0416	4.2274	20.3230
2.7408	20.2463	4.1645	20.6348
2.7824	20.4535	4.1224	20.8243
2.8235	20.6621	4.0916	20.8799
2.8642	20.8707	4.0589	20.7968
2.9045	21.0779	4.0074	20.5767
2.9442	21.2820	3.9141	20.2301
2.9826	21.4821	3.7335	19.7821
3.0185	21.6774	3.4259	19.2613
3.0504	21.8672	2.9799	18.6949
3.0775	22.0512	2.4133	18.1086
3.0985	22.2294	1.7724	17.5270
3.1129	22.4019	1.1231	16.9710
3.1210	22.5690	0.5055	16.4530
3.1233	22.7311	-0.0591	15.9832
3.1202	22.8888	-0.5601	15.5694
3.1123	23.0427	-0.9980	15.2174
3.1003	23.1934	-1.3840	14.9303
3.0847	23.3416	-1.7295	14.7099
3.0658	23.4879	-2.0408	14.5572
3.0440	23.6330	-2.3244	14.4728
3.0194	23.7777	-2.5866	14.4567
2.9922	23.9225	-2.8327	14.5084
2.9627	24.0681	-3.0675	14.6266
2.9309	24.2151	-3.2953	14.8099
2.8969	24.3643	-3.5193	15.0558
2.8606	24.5163	-3.7426	15.3616
2.8220	24.6717	-3.9691	15.7248
2.7811	24.8309	-4.2027	16.1435
2.7379	24.9946	-4.4468	16.6143
2.6922	25.1633	-4.7061	17.1329
2.6438	25.3375	-4.9870	17.6937
2.5924	25.5174	-5.2974	18.2900
2.5377	25.7034	-5.6468	18.9139
2.4793	25.8958	-6.0460	19.5566
2.4166	26.0946	-6.5075	20.2080
2.3489	26.2999	-7.0454	20.8578
2.2754	26.5117	-7.6863	21.4944
2.1947	26.7298	-8.4542	22.1061
2.1058	26.9537	-9.3660	22.6808
2.0069	27.1832	-10.4315	23.2067
1.8964	27.4177	-11.6762	23.6721
1.7726	27.6564	-13.0062	24.0647
1.6372	27.8987	-14.0866	24.3684
1.4934	28.1434	-14.6663	24.5714
1.3464	28.3897	-14.5978	24.6665
1.2034	28.6364	-13.8375	24.6510

1.0714	28.8823	-12.5968	24.5293
0.9524	29.1265	-11.2209	24.3112
0.8464	29.3681	-9.9093	24.0060
0.7528	29.6064	-8.7769	23.6231
0.6699	29.8405	-7.8542	23.1723
0.5955	30.0698	-7.0891	22.6636
0.5279	30.2937	-6.4416	22.1083
0.4663	30.5118	-5.8983	21.5186
0.4097	30.7240	-5.4364	20.9074
0.3574	30.9299	-5.0377	20.2877
0.3088	31.1297	-4.6875	19.6729
0.2635	31.3234	-4.3738	19.0750
0.2212	31.5112	-4.0877	18.5046
0.1817	31.6936	-3.8217	17.9712
0.1448	31.8708	-3.5692	17.4833
0.1103	32.0435	-3.3238	17.0482
0.0783	32.2121	-3.0802	16.6722
0.0487	32.3772	-2.8336	16.3604
0.0216	32.5395	-2.5798	16.1170
-0.0029	32.6998	-2.3141	15.9452
-0.0246	32.8587	-2.0310	15.8479
-0.0434	33.0170	-1.7245	15.8273
-0.0590	33.1755	-1.3873	15.8846
-0.0710	33.3349	-1.0115	16.0205
-0.0791	33.4961	-0.5891	16.2348
-0.0827	33.6599	-0.1082	16.5261
-0.0810	33.8269	0.4404	16.8917
-0.0736	33.9979	1.0538	17.3261
-0.0598	34.1736	1.7167	17.8210
-0.0392	34.3545	2.4008	18.3655
-0.0118	34.5410	3.0438	18.9434
0.0213	34.7334	3.5743	19.5325
0.0591	34.9316	3.9541	20.1061
0.0999	35.1354	4.1796	20.6334
0.1422	35.3441	4.2821	21.0814
0.1853	35.5567	4.3115	21.4202
0.2284	35.7720	4.3090	21.6272
0.2714	35.9887	4.3045	21.6885
0.3145	36.2053	4.3165	21.6008
0.3578	36.4203	4.3533	21.3731
0.4017	36.6323	4.4200	21.0224
0.4464	36.8404	4.5183	20.5729
0.4922	37.0436	4.6474	20.0561
0.5394	37.2413	4.8054	19.5058
0.5884	37.4336	4.9905	18.9558
0.6393	37.6205	5.2004	18.4385
0.6924	37.8026	5.4337	17.9815
0.7480	37.9806	5.6900	17.6073
0.8063	38.1552	5.9692	17.3338
0.8675	38.3276	6.2725	17.1738
0.9319	38.4990	6.6016	17.1352
0.9996	38.6706	6.9598	17.2189
1.0712	38.8437	7.3537	17.4184
1.1469	39.0194	7.7906	17.7203

1.2272	39.1985	8.2787	18.1037
1.3126	39.3817	8.8265	18.5401
1.4039	39.5693	9.4430	18.9935
1.5016	39.7615	10.1343	19.4245
1.6066	39.9577	10.8784	19.7863
1.7193	40.1568	11.6200	20.0384
1.8390	40.3578	12.2722	20.1531
1.9642	40.5593	12.7167	20.1154
2.0920	40.7597	12.8037	19.9230
2.2184	40.9573	12.4242	19.5948
2.3392	41.1510	11.6902	19.1675
2.4516	41.3403	10.7424	18.6794
2.5539	41.5246	9.7001	18.1712
2.6457	41.7040	8.6610	17.6856
2.7274	41.8787	7.6991	17.2662
2.7999	42.0496	6.8322	16.9338
2.8643	42.2177	6.0532	16.7016
2.9213	42.3841	5.3553	16.5797
2.9717	42.5497	4.7305	16.5732
3.0161	42.7159	4.1690	16.6817
3.0552	42.8836	3.6602	16.8989
3.0894	43.0538	3.1972	17.2144
3.1192	43.2276	2.7752	17.6188
3.1450	43.4060	2.3895	18.0995
3.1671	43.5897	2.0356	18.6408
3.1858	43.7792	1.7090	19.2237
3.2014	43.9747	1.4054	19.8257
3.2140	44.1761	1.1205	20.4214
3.2239	44.3833	0.8501	20.9817
3.2311	44.5957	0.5900	21.4746
3.2357	44.8125	0.3354	21.8741
3.2378	45.0329	0.0790	22.1718
3.2373	45.2556	-0.1877	22.3537
3.2340	45.4794	-0.4756	22.4123
3.2277	45.7033	-0.7977	22.3467
3.2179	45.9260	-1.1694	22.1625
3.2040	46.1463	-1.6092	21.8718
3.1854	46.3631	-2.1434	21.4906
3.1611	46.5758	-2.7534	21.0355
3.1303	46.7836	-3.4027	20.5227
3.0929	46.9861	-4.0488	19.9670
3.0493	47.1829	-4.6439	19.3824
3.0003	47.3737	-5.1342	18.7815
2.9472	47.5585	-5.4720	18.1753
2.8913	47.7373	-5.6804	17.5718
2.8339	47.9100	-5.7979	16.9794
2.7755	48.0769	-5.8552	16.4058
2.7169	48.2382	-5.8765	15.8576
2.6581	48.3942	-5.8793	15.3406
2.5993	48.5451	-5.8758	14.8592
2.5406	48.6915	-5.8717	14.4166
2.4819	48.8337	-5.8696	14.0150
2.4231	48.9720	-5.8717	13.6565
2.3644	49.1070	-5.8796	13.3426

2.3055	49.2390	-5.8939	13.0744
2.2465	49.3686	-5.9152	12.8528
2.1872	49.4962	-5.9429	12.6779
2.1276	49.6222	-5.9763	12.5498
2.0677	49.7473	-6.0156	12.4683
2.0073	49.8718	-6.0611	12.4340
1.9464	49.9962	-6.1129	12.4478
1.8850	50.1209	-6.1713	12.5102
1.8230	50.2466	-6.2370	12.6215
1.7603	50.3736	-6.3109	12.7820
1.6968	50.5024	-6.3944	12.9918
1.6324	50.6336	-6.4890	13.2504
1.5670	50.7676	-6.5967	13.5577
1.5004	50.9048	-6.7195	13.9129
1.4325	51.0459	-6.8601	14.3153
1.3631	51.1912	-7.0212	14.7640
1.2920	51.3413	-7.2057	15.2578
1.2189	51.4965	-7.4198	15.7952
1.1435	51.6573	-7.6696	16.3733
1.0653	51.8241	-7.9587	16.9878
0.9841	51.9972	-8.2884	17.6333
0.8994	52.1769	-8.6574	18.3029
0.8108	52.3633	-9.0652	18.9884
0.7176	52.5567	-9.5204	19.6807
0.6202	52.7569	-9.9111	20.3662
0.5201	52.9639	-10.1219	21.0314
0.4192	53.1774	-10.0719	21.6640
0.3201	53.3971	-9.7143	22.2525
0.2260	53.6223	-9.0363	22.7869
0.1402	53.8526	-8.0775	23.2585
0.0647	54.0872	-7.0337	23.6617
-0.0007	54.3256	-6.0526	23.9883
-0.0569	54.5667	-5.2026	24.2289
-0.1052	54.8098	-4.4894	24.3730
-0.1471	55.0538	-3.8969	24.4114
-0.1835	55.2977	-3.4018	24.3389
-0.2154	55.5402	-2.9818	24.1552
-0.2433	55.7804	-2.6166	23.8652
-0.2678	56.0172	-2.2905	23.4804
-0.2892	56.2497	-1.9905	23.0165
-0.3077	56.4773	-1.7052	22.4914
-0.3233	56.6994	-1.4250	21.9257
-0.3362	56.9158	-1.1419	21.3424
-0.3461	57.1263	-0.8492	20.7660
-0.3531	57.3312	-0.5393	20.2169
-0.3568	57.5308	-0.2051	19.7137
-0.3571	57.7257	0.1614	19.2737
-0.3535	57.9166	0.5687	18.9114
-0.3456	58.1043	1.0261	18.6393
-0.3328	58.2897	1.5441	18.4677
-0.3145	58.4740	2.1337	18.4045
-0.2898	58.6582	2.8068	18.4551
-0.2580	58.8434	3.5712	18.6218
-0.2181	59.0310	4.4220	18.9024

-0.1694	59.2218	5.3292	19.2897
-0.1115	59.4171	6.2266	19.7701
-0.0452	59.6175	7.0044	20.3214
0.0278	59.8236	7.5483	20.9119
0.1047	60.0358	7.7815	21.5020
0.1826	60.2536	7.7678	22.0382
0.2595	60.4762	7.5896	22.4741
0.3341	60.7025	7.3242	22.7745
0.4059	60.9311	7.0440	22.9154
0.4751	61.1602	6.8090	22.8832
0.5422	61.3882	6.6325	22.6873
0.6079	61.6134	6.5147	22.3570
0.6727	61.8348	6.4541	21.9252
0.7372	62.0516	6.4475	21.4277
0.8019	62.2633	6.4903	20.9037
0.8672	62.4699	6.5762	20.3951
0.9335	62.6716	6.6973	19.9469
1.0013	62.8690	6.8500	19.5908
1.0707	63.0634	7.0328	19.3486
1.1420	63.2563	7.2453	19.2357
1.2156	63.4488	7.4895	19.2580
1.2918	63.6423	7.7698	19.4117
1.3711	63.8378	8.0929	19.6833
1.4539	64.0363	8.4682	20.0496
1.5408	64.2388	8.9072	20.4778
1.6318	64.4463	9.4296	20.9342
1.7283	64.6584	10.0448	21.3639
1.8318	64.8741	10.7335	21.7068
1.9431	65.0921	11.4530	21.9197
2.0619	65.3112	12.1372	21.9767
2.1869	65.5300	12.6969	21.8688
2.3160	65.7473	13.0191	21.6043
2.4461	65.9616	12.9679	21.2082
2.5732	66.1714	12.3861	20.7227
2.6917	66.3758	11.3768	20.2053
2.7992	66.5751	10.1994	19.7045
2.8953	66.7697	8.9919	19.2585
2.9800	66.9605	7.8514	18.8982
3.0538	67.1484	6.8350	18.6476
3.1177	67.3343	5.9592	18.5232
3.1731	67.5196	5.2000	18.5347
3.2217	67.7055	4.5203	18.6800
3.2638	67.8935	3.9211	18.9462
3.3003	68.0847	3.3921	19.3206
3.3318	68.2802	2.9234	19.7864
3.3589	68.4808	2.5067	20.3225
3.3821	68.6869	2.1351	20.9036
3.4018	68.8989	1.8026	21.5003
3.4183	69.1170	1.5037	22.0852
3.4319	69.3406	1.2340	22.6268
3.4430	69.5692	0.9893	23.0932
3.4518	69.8020	0.7642	23.4592
3.4584	70.0378	0.5521	23.7062
3.4629	70.2755	0.3451	23.8221

3.4653	70.5138	0.1343	23.8015
3.4655	70.7513	-0.0905	23.6454
3.4634	70.9864	-0.3406	23.3633
3.4585	71.2182	-0.6382	22.9756
3.4504	71.4456	-1.0042	22.5048
3.4382	71.6681	-1.4491	21.9744
3.4211	71.8850	-1.9729	21.4086
3.3984	72.0962	-2.5574	20.8298
3.3699	72.3016	-3.1379	20.2544
3.3360	72.5014	-3.6567	19.6957
3.2972	72.6956	-4.0819	19.1651
3.2547	72.8848	-4.4076	18.6712
3.2093	73.0692	-4.6495	18.2214
3.1619	73.2494	-4.8314	17.8220
3.1128	73.4259	-4.9737	17.4783
3.0624	73.5992	-5.0924	17.1946
3.0110	73.7699	-5.1989	16.9742
2.9585	73.9388	-5.3004	16.8196
2.9050	74.1066	-5.4025	16.7325
2.8504	74.2737	-5.5088	16.7142
2.7947	74.4411	-5.6222	16.7658
2.7379	74.6093	-5.7458	16.8874
2.6798	74.7791	-5.8830	17.0787
2.6202	74.9511	-6.0371	17.3392
2.5590	75.1261	-6.2117	17.6672
2.4959	75.3046	-6.4108	18.0611
2.4307	75.4875	-6.6401	18.5181
2.3630	75.6752	-6.9061	19.0345
2.2924	75.8683	-7.2171	19.6053
2.2185	76.0675	-7.5843	20.2242
2.1405	76.2730	-8.0224	20.8833
2.0577	76.4852	-8.5489	21.5733
1.9695	76.7045	-9.1704	22.2837
1.8745	76.9309	-9.9238	23.0022
1.7705	77.1645	-10.8746	23.7144
1.6556	77.4052	-12.0258	24.4044
1.5286	77.6525	-13.3160	25.0552
1.3892	77.9061	-14.6195	25.6482
1.2372	78.1652	-15.7383	26.1631
1.0760	78.4291	-16.2682	26.5778
0.9148	78.6965	-15.8981	26.8814
0.7616	78.9663	-14.6789	27.0700
0.6229	79.2374	-13.0183	27.1451
0.5010	79.5088	-11.3916	27.1143
0.3944	79.7793	-9.9556	26.9839
0.3009	80.0481	-8.7746	26.7588
0.2181	80.3142	-7.8345	26.4450
0.1437	80.5768	-7.0769	26.0502
0.0761	80.8350	-6.4673	25.5856
0.0140	81.0883	-5.9718	25.0652
-0.0436	81.3362	-5.5636	24.5054
-0.0975	81.5783	-5.2226	23.9247
-0.1483	81.8146	-4.9324	23.3414
-0.1963	82.0452	-4.6811	22.7731

-0.2420	82.2702	-4.4583	22.2361
-0.2855	82.4901	-4.2549	21.7449
-0.3271	82.7053	-4.0628	21.3122
-0.3668	82.9166	-3.8755	20.9490
-0.4046	83.1246	-3.6858	20.6639
-0.4405	83.3301	-3.4855	20.4633
-0.4743	83.5341	-3.2654	20.3520
-0.5057	83.7375	-3.0146	20.3331
-0.5344	83.9411	-2.7208	20.4081
-0.5599	84.1459	-2.3694	20.5767
-0.5817	84.3529	-1.9506	20.8366
-0.5989	84.5630	-1.4840	21.1853
-0.6113	84.7769	-1.0000	21.6157
-0.6189	84.9955	-0.5371	22.1159
-0.6222	85.2194	-0.1417	22.6690
-0.6221	85.4490	0.1440	23.2533
-0.6196	85.6845	0.3411	23.8393
-0.6155	85.9257	0.4807	24.3921
-0.6101	86.1721	0.5881	24.8789
-0.6037	86.4229	0.6837	25.2685
-0.5964	86.6771	0.7831	25.5320
-0.5880	86.9331	0.8970	25.6488
-0.5784	87.1895	1.0315	25.6114
-0.5673	87.4447	1.1920	25.4217
-0.5545	87.6973	1.3842	25.0912
-0.5395	87.9461	1.6134	24.6407
-0.5220	88.1900	1.8850	24.1006
-0.5016	88.4281	2.2043	23.5099
-0.4778	88.6600	2.5759	22.9043
-0.4499	88.8860	3.0114	22.3213
-0.4173	89.1066	3.5237	21.7958
-0.3791	89.3224	4.1254	21.3573
-0.3344	89.5343	4.8294	21.0300
-0.2821	89.7436	5.6486	20.8325
-0.2210	89.9515	6.5958	20.7786
-0.1498	90.1596	7.6837	20.8765
-0.0669	90.3694	8.9207	21.1240
0.0287	90.5824	10.2222	21.5055
0.1372	90.7999	11.4400	21.9940
0.2568	91.0226	12.4045	22.5469
0.3839	91.2509	12.9244	23.1054
0.5131	91.4845	12.8434	23.6014
0.6392	91.7226	12.3314	23.9734
0.7593	91.9634	11.6232	24.1720
0.8719	92.2052	10.8851	24.1780
0.9772	92.4463	10.2156	24.0025
1.0764	92.6848	9.6495	23.6835
1.1705	92.9196	9.1931	23.2662
1.2606	93.1500	8.8345	22.8076
1.3475	93.3759	8.5601	22.3610
1.4320	93.5975	8.3564	21.9740
1.5148	93.8156	8.2104	21.6878
1.5964	94.0312	8.1130	21.5300
1.6773	94.2458	8.0607	21.5142

1.7577	94.4613	8.0529	21.6429
1.8383	94.6793	8.0918	21.9072
1.9195	94.9007	8.1822	22.2861
2.0019	95.1263	8.3316	22.7470
2.0863	95.3564	8.5502	23.2457
2.1734	95.5912	8.8509	23.7259
2.2640	95.8303	9.2493	24.1197
2.3589	96.0728	9.7592	24.3587
2.4595	96.3169	10.3699	24.4233
2.5666	96.5606	11.0345	24.2982
2.6802	96.8021	11.6448	23.9907
2.7987	97.0399	12.0292	23.5333
2.9192	97.2725	11.9634	22.9814
3.0363	97.4994	11.3942	22.4030
3.1456	97.7207	10.4250	21.8610
3.2439	97.9370	9.2098	21.4058
3.3297	98.1492	7.9526	21.0743
3.4033	98.3589	6.8037	20.8881
3.4661	98.5675	5.7810	20.8530
3.5194	98.7765	4.8900	20.9669
3.5645	98.9873	4.1271	21.2204
3.6024	99.2013	3.4802	21.5975
3.6343	99.4196	2.9283	22.0752
3.6612	99.6431	2.4538	22.6280
3.6836	99.8722	2.0477	23.2217
3.7023	100.1074	1.7006	23.8200
3.7178	100.3484	1.4039	24.3889
3.7305	100.5949	1.1500	24.8962
3.7409	100.8461	0.9321	25.3120
3.7493	101.1009	0.7444	25.6084
3.7559	101.3579	0.5820	25.7595
3.7610	101.6156	0.4396	25.7522
3.7647	101.8724	0.3102	25.5939
3.7672	102.1270	0.1852	25.2972
3.7684	102.3780	0.0529	24.8836
3.7682	102.6244	-0.1029	24.3816
3.7662	102.8654	-0.3034	23.8232
3.7619	103.1008	-0.5734	23.2412
3.7544	103.3303	-0.9316	22.6663
3.7430	103.5542	-1.3709	22.1239
3.7268	103.7729	-1.8566	21.6343
3.7059	103.9871	-2.3317	21.2111
3.6804	104.1974	-2.7542	20.8639
3.6510	104.4047	-3.1074	20.5996
3.6185	104.6097	-3.3967	20.4221
3.5833	104.8134	-3.6359	20.3343
3.5459	105.0167	-3.8402	20.3370
3.5065	105.2205	-4.0221	20.4297
3.4655	105.4256	-4.1923	20.6104
3.4227	105.6329	-4.3595	20.8752
3.3782	105.8433	-4.5314	21.2189
3.3319	106.0574	-4.7131	21.6343
3.2838	106.2761	-4.9108	22.1122
3.2337	106.4999	-5.1328	22.6416

3.1812	106.7292	-5.3886	23.2096
3.1258	106.9642	-5.6901	23.8010
3.0672	107.2052	-6.0505	24.3991
3.0046	107.4522	-6.4850	24.9851
2.9372	107.7049	-7.0151	25.5424
2.8639	107.9629	-7.6744	26.0544
2.7831	108.2257	-8.4988	26.5061
2.6932	108.4928	-9.5256	26.8847
2.5918	108.7632	-10.7934	27.1801
2.4760	109.0361	-12.3957	27.3867
2.3433	109.3106	-14.1646	27.4946
2.1942	109.5855	-15.6710	27.4882
2.0326	109.8599	-16.5861	27.3595
1.8651	110.1323	-16.6853	27.1073
1.7014	110.4017	-15.8659	26.7383
1.5496	110.6667	-14.4984	26.2666
1.4119	110.9266	-13.0176	25.7121
1.2883	111.1807	-11.6645	25.0945
1.1774	111.4284	-10.5430	24.4328
1.0769	111.6694	-9.6231	23.7450
0.9846	111.9033	-8.8605	23.0464
0.8992	112.1303	-8.2363	22.3513
0.8195	112.3504	-7.7227	21.6726
0.7445	112.5639	-7.2972	21.0228
0.6734	112.7710	-6.9417	20.4129
0.6055	112.9722	-6.6415	19.8520
0.5404	113.1682	-6.3868	19.3469
0.4777	113.3594	-6.1690	18.9034
0.4170	113.5465	-5.9810	18.5263
0.3580	113.7302	-5.8168	18.2193
0.3005	113.9111	-5.6714	17.9849
0.2444	114.0901	-5.5410	17.8247
0.1896	114.2679	-5.4226	17.7391
0.1360	114.4452	-5.3122	17.7283
0.0834	114.6227	-5.2071	17.7919
0.0318	114.8013	-5.1024	17.9286
-0.0187	114.9815	-4.9900	18.1364
-0.0679	115.1642	-4.8588	18.4122
-0.1157	115.3500	-4.6945	18.7521
-0.1617	115.5394	-4.4809	19.1511
-0.2052	115.7332	-4.1913	19.6032
-0.2452	115.9317	-3.8014	20.1015
-0.2807	116.1353	-3.3125	20.6372
-0.3111	116.3445	-2.7530	21.1996
-0.3358	116.5594	-2.1784	21.7763
-0.3548	116.7800	-1.6479	22.3505
-0.3690	117.0063	-1.1922	22.8999
-0.3790	117.2378	-0.8209	23.4009
-0.3857	117.4741	-0.5230	23.8283
-0.3896	117.7141	-0.2718	24.1563
-0.3912	117.9568	-0.0509	24.3641
-0.3907	118.2009	0.1543	24.4363
-0.3881	118.4450	0.3557	24.3667
-0.3835	118.6878	0.5629	24.1584

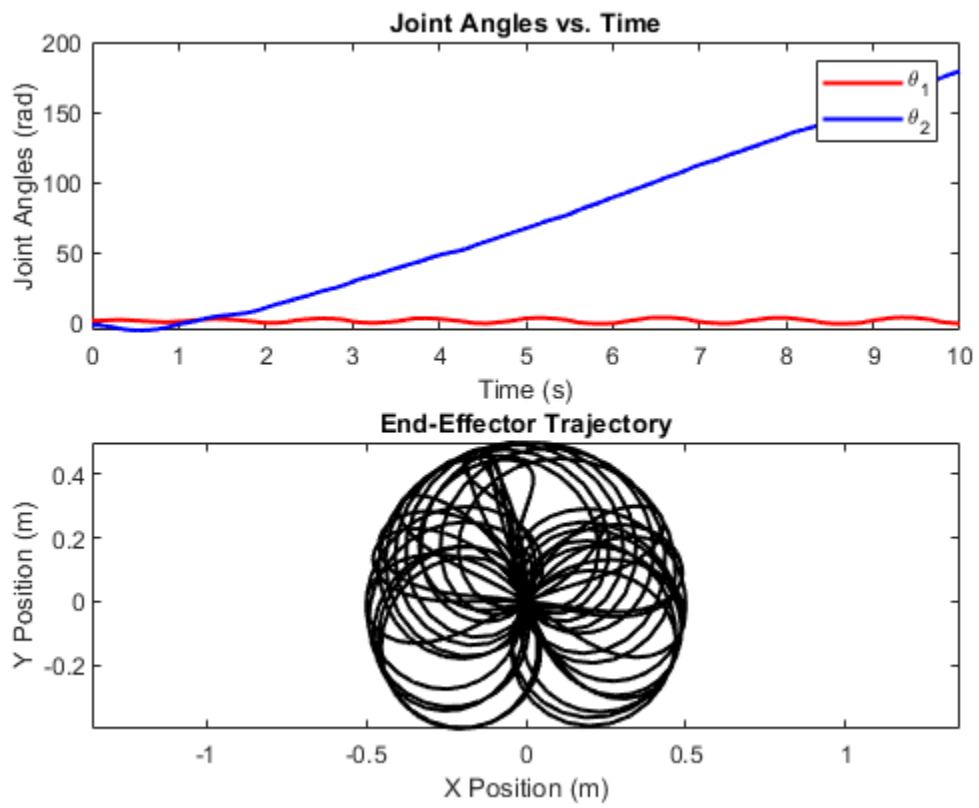
-0.3768	118.9278	0.7826	23.8233
-0.3678	119.1639	1.0213	23.3806
-0.3563	119.3951	1.2847	22.8574
-0.3420	119.6208	1.5783	22.2825
-0.3246	119.8407	1.9081	21.6862
-0.3037	120.0546	2.2801	21.1001
-0.2789	120.2628	2.7001	20.5546
-0.2496	120.4658	3.1770	20.0765
-0.2152	120.6645	3.7229	19.6894
-0.1749	120.8600	4.3492	19.4120
-0.1279	121.0534	5.0671	19.2575
-0.0732	121.2458	5.8870	19.2343
-0.0097	121.4385	6.8190	19.3454
0.0637	121.6330	7.8726	19.5885
0.1481	121.8306	9.0489	19.9527
0.2447	122.0324	10.2644	20.4130
0.3531	122.2391	11.3830	20.9354
0.4716	122.4512	12.2511	21.4751
0.5968	122.6685	12.6973	21.9768
0.7236	122.8904	12.6067	22.3829
0.8476	123.1157	12.1378	22.6456
0.9659	123.3427	11.4785	22.7343
1.0772	123.5697	10.7689	22.6443
1.1813	123.7951	10.1014	22.3979
1.2794	124.0173	9.5218	22.0337
1.3721	124.2355	9.0334	21.5984
1.4603	124.4492	8.6269	21.1444
1.5448	124.6585	8.2923	20.7180
1.6264	124.8638	8.0185	20.3590
1.7054	125.0660	7.7938	20.1011
1.7824	125.2660	7.6075	19.9684
1.8577	125.4651	7.4558	19.9701
1.9317	125.6651	7.3371	20.1080
2.0045	125.8675	7.2520	20.3744
2.0767	126.0734	7.2024	20.7526
2.1486	126.2836	7.1923	21.2168
2.2206	126.4987	7.2274	21.7318
2.2933	126.7187	7.3152	22.2531
2.3672	126.9435	7.4648	22.7272
2.4430	127.1726	7.6873	23.0914
2.5212	127.4048	7.9855	23.3086
2.6029	127.6382	8.3589	23.3605
2.6887	127.8713	8.7802	23.2349
2.7785	128.1023	9.1838	22.9391
2.8719	128.3296	9.4656	22.4995
2.9671	128.5519	9.4879	21.9594
3.0606	128.7686	9.1596	21.3752
3.1488	128.9795	8.4793	20.7988
3.2291	129.1848	7.5357	20.2747
3.2993	129.3853	6.4994	19.8398
3.3591	129.5820	5.4927	19.5171
3.4094	129.7761	4.5613	19.3174
3.4509	129.9688	3.7320	19.2460
3.4845	130.1614	3.0125	19.3026

3.5114	130.3552	2.3914	19.4818
3.5325	130.5513	1.8469	19.7722
3.5485	130.7507	1.3698	20.1600
3.5601	130.9544	0.9499	20.6300
3.5676	131.1634	0.5773	21.1640
3.5717	131.3779	0.2430	21.7408
3.5726	131.5985	-0.0616	22.3359
3.5706	131.8249	-0.3444	22.9220
3.5658	132.0570	-0.6129	23.4684
3.5584	132.2941	-0.8737	23.9423
3.5483	132.5356	-1.1349	24.3240
3.5357	132.7803	-1.4054	24.5974
3.5202	133.0271	-1.6962	24.7493
3.5017	133.2747	-2.0207	24.7739
3.4797	133.5221	-2.3949	24.6724
3.4535	133.7678	-2.8373	24.4531
3.4226	134.0109	-3.3691	24.1315
3.3859	134.2502	-4.0083	23.7250
3.3421	134.4851	-4.7448	23.2517
3.2906	134.7151	-5.5339	22.7278
3.2314	134.9396	-6.2973	22.1676
3.1652	135.1583	-6.9227	21.5831
3.0938	135.3712	-7.3141	20.9841
3.0196	135.5780	-7.4997	20.3807
2.9443	135.7789	-7.5318	19.7834
2.8693	135.9738	-7.4631	19.2027
2.7952	136.1630	-7.3465	18.6492
2.7224	136.3468	-7.2254	18.1324
2.6507	136.5258	-7.1121	17.6589
2.5801	136.7002	-7.0128	17.2345
2.5103	136.8707	-6.9318	16.8641
2.4413	137.0377	-6.8722	16.5518
2.3728	137.2019	-6.8349	16.3006
2.3046	137.3639	-6.8195	16.1130
2.2364	137.5244	-6.8238	15.9903
2.1680	137.6839	-6.8469	15.9333
2.0993	137.8432	-6.8899	15.9433
2.0301	138.0029	-6.9525	16.0215
1.9602	138.1638	-7.0358	16.1684
1.8894	138.3265	-7.1417	16.3840
1.8174	138.4918	-7.2732	16.6673
1.7440	138.6602	-7.4341	17.0171
1.6687	138.8324	-7.6296	17.4311
1.5912	139.0090	-7.8655	17.9067
1.5111	139.1907	-8.1489	18.4405
1.4280	139.3780	-8.4865	19.0282
1.3412	139.5714	-8.8897	19.6641
1.2500	139.7714	-9.3786	20.3405
1.1532	139.9783	-9.9619	21.0477
1.0503	140.1924	-10.6349	21.7738
0.9403	140.4138	-11.3796	22.5047
0.8226	140.6425	-12.1654	23.2243
0.6972	140.8782	-12.8494	23.9136
0.5668	141.1206	-13.1819	24.5528

0.4355	141.3690	-12.9824	25.1257
0.3093	141.6228	-12.1589	25.6202
0.1940	141.8811	-10.8957	26.0318
0.0917	142.1431	-9.5253	26.3585
0.0029	142.4080	-8.2623	26.5964
-0.0742	142.6748	-7.1953	26.7395
-0.1417	142.9425	-6.3253	26.7808
-0.2013	143.2101	-5.6238	26.7148
-0.2546	143.4764	-5.0576	26.5404
-0.3028	143.7405	-4.5947	26.2617
-0.3468	144.0013	-4.2097	25.8889
-0.3872	144.2580	-3.8832	25.4373
-0.4245	144.5098	-3.5987	24.9249
-0.4592	144.7563	-3.3425	24.3724
-0.4914	144.9973	-3.1038	23.8030
-0.5213	145.2325	-2.8745	23.2423
-0.5490	145.4622	-2.6462	22.7116
-0.5743	145.6868	-2.4093	22.2292
-0.5971	145.9070	-2.1547	21.8120
-0.6173	146.1234	-1.8726	21.4744
-0.6344	146.3369	-1.5533	21.2284
-0.6482	146.5483	-1.1867	21.0834
-0.6580	146.7589	-0.7623	21.0464
-0.6632	146.9696	-0.2696	21.1217
-0.6632	147.1816	0.2839	21.3108
-0.6574	147.3962	0.8558	21.6123
-0.6461	147.6143	1.3905	22.0184
-0.6300	147.8369	1.8216	22.5150
-0.6103	148.0648	2.0888	23.0805
-0.5887	148.2986	2.2143	23.6822
-0.5663	148.5384	2.2459	24.2813
-0.5439	148.7841	2.2284	24.8379
-0.5218	149.0349	2.2034	25.3105
-0.4998	149.2899	2.1979	25.6628
-0.4777	149.5477	2.2227	25.8666
-0.4552	149.8066	2.2856	25.9056
-0.4318	150.0651	2.3922	25.7771
-0.4072	150.3217	2.5458	25.4915
-0.3808	150.5746	2.7484	25.0712
-0.3521	150.8226	3.0036	24.5471
-0.3206	151.0651	3.3147	23.9632
-0.2857	151.3017	3.6865	23.3613
-0.2467	151.5325	4.1261	22.7804
-0.2029	151.7577	4.6430	22.2564
-0.1535	151.9780	5.2485	21.8219
-0.0975	152.1946	5.9563	21.5065
-0.0339	152.4087	6.7811	21.3340
0.0386	152.6218	7.7459	21.3143
0.1216	152.8355	8.8703	21.4488
0.2166	153.0512	10.1490	21.7268
0.3250	153.2704	11.5526	22.1252
0.4480	153.4940	12.9951	22.6071
0.5841	153.7226	14.1843	23.1154
0.7297	153.9562	14.8752	23.5887

0.8794	154.1941	14.9315	23.9649
1.0262	154.4350	14.3618	24.1857
1.1653	154.6772	13.4404	24.2236
1.2949	154.9188	12.4259	24.0798
1.4143	155.1582	11.4764	23.7822
1.5248	155.3942	10.6515	23.3861
1.6277	155.6258	9.9528	22.9537
1.7242	155.8533	9.3703	22.5415
1.8154	156.0770	8.8859	22.2003
1.9022	156.2977	8.4838	21.9686
1.9853	156.5168	8.1499	21.8729
2.0654	156.7355	7.8734	21.9270
2.1430	156.9555	7.6498	22.1273
2.2186	157.1783	7.4777	22.4574
2.2927	157.4051	7.3584	22.8911
2.3659	157.6367	7.2963	23.3925
2.4388	157.8733	7.2982	23.9153
2.5121	158.1149	7.3737	24.4037
2.5864	158.3611	7.5289	24.7977
2.6626	158.6106	7.7738	25.0541
2.7422	158.8617	8.1302	25.1378
2.8262	159.1125	8.5830	25.0330
2.9150	159.3612	9.0778	24.7444
3.0080	159.6065	9.5210	24.2973
3.1042	159.8470	9.7795	23.7377
3.2017	160.0814	9.6784	23.1313
3.2958	160.3096	9.1128	22.5439
3.3827	160.5323	8.2269	22.0282
3.4599	160.7506	7.1735	21.6243
3.5263	160.9655	6.0802	21.3583
3.5818	161.1784	5.0500	21.2428
3.6277	161.3908	4.1528	21.2774
3.6653	161.6043	3.3836	21.4543
3.6958	161.8203	2.7257	21.7605
3.7201	162.0400	2.1649	22.1778
3.7393	162.2642	1.6869	22.6832
3.7541	162.4938	1.2777	23.2485
3.7651	162.7293	0.9241	23.8433
3.7727	162.9708	0.6167	24.4350
3.7775	163.2179	0.3478	24.9849
3.7798	163.4701	0.1097	25.4600
3.7798	163.7266	-0.1053	25.8334
3.7777	163.9862	-0.3049	26.0841
3.7737	164.2478	-0.4968	26.1972
3.7678	164.5099	-0.6886	26.1636
3.7599	164.7707	-0.8880	25.9843
3.7500	165.0291	-1.1101	25.6772
3.7376	165.2839	-1.3737	25.2649
3.7223	165.5341	-1.6947	24.7725
3.7034	165.7792	-2.0866	24.2274
3.6803	166.0186	-2.5613	23.6597
3.6518	166.2524	-3.1105	23.0949
3.6180	166.4806	-3.6583	22.5508
3.5790	166.7035	-4.1408	22.0423

3.5357	166.9216	-4.5224	21.5820
3.4889	167.1354	-4.7960	21.1796
3.4400	167.3454	-4.9821	20.8425
3.3895	167.5525	-5.1120	20.5780
3.3379	167.7573	-5.2096	20.3917
3.2853	167.9606	-5.2936	20.2878
3.2319	168.1633	-5.3777	20.2690
3.1777	168.3662	-5.4699	20.3365
3.1225	168.5703	-5.5749	20.4899
3.0661	168.7762	-5.6985	20.7279
3.0084	168.9850	-5.8442	21.0477
2.9492	169.1975	-6.0174	21.4444
2.8880	169.4142	-6.2254	21.9117
2.8246	169.6360	-6.4770	22.4410
2.7583	169.8632	-6.7833	23.0219
2.6887	170.0965	-7.1571	23.6421
2.6149	170.3362	-7.6149	24.2880
2.5360	170.5823	-8.1818	24.9440
2.4508	170.8350	-8.8884	25.5935
2.3577	171.0941	-9.7707	26.2196
2.2546	171.3593	-10.8700	26.8056
2.1396	171.6300	-12.2475	27.3362
2.0094	171.9057	-13.8915	27.7951
1.8618	172.1856	-15.5770	28.1592
1.6982	172.4685	-16.9811	28.4097
1.5240	172.7534	-17.6903	28.5328
1.3484	173.0388	-17.2328	28.5202
1.1832	173.3233	-15.7947	28.3754
1.0337	173.6057	-14.0223	28.1111
0.9017	173.8852	-12.3334	27.7434
0.7859	174.1605	-10.9103	27.2909
0.6828	174.4308	-9.7475	26.7715
0.5902	174.6957	-8.8177	26.1977
0.5059	174.9547	-8.0759	25.5855
0.4282	175.2074	-7.4829	24.9520
0.3558	175.4537	-7.0047	24.3155
0.2878	175.6936	-6.6157	23.6928
0.2233	175.9275	-6.2984	23.0993
0.1617	176.1557	-6.0377	22.5488
0.1025	176.3787	-5.8213	22.0535
0.0452	176.5971	-5.6394	21.6238
-0.0105	176.8115	-5.4849	21.2682
-0.0647	177.0228	-5.3531	20.9938
-0.1175	177.2316	-5.2360	20.8047
-0.1692	177.4391	-5.1302	20.7031
-0.2200	177.6460	-5.0309	20.6902
-0.2699	177.8532	-4.9289	20.7655
-0.3188	178.0617	-4.8103	20.9269
-0.3662	178.2721	-4.6567	21.1705
-0.4118	178.4853	-4.4452	21.4910
-0.4548	178.7021	-4.1482	21.8815
-0.4943	178.9231	-3.7385	22.3335
-0.5292	179.1490	-3.2395	22.8373
-0.5590	179.3800	-2.7085	23.3806



Published with MATLAB® R2022a