ASSIGNMENT 3 Soujatya Roy 16CH10046

1.

theta1 = 0.1;theta2 = 0.2;theta3 = 0.3;theta4 = 0.4;theta5 = 0.5;

theta0 = 0.7; theta6 = 0.5;

tol = [0.00001;0.00001;0.00001;0.00001;0.00001];

b = 0.7; k = pi/3;

for i=1:100

f1 = (theta0 - 2\*theta1 + theta2 + b\*sin(theta1)\*k^2)/k^2;

f2 = (theta1 - 2\*theta2 + theta3 + b\*sin(theta2)\*k^2)/k^2;

f3 = (theta2 - 2\*theta3 + theta4 + b\*sin(theta3)\*k^2)/k^2;

f4 = (theta3 - 2\*theta4 + theta5 + b\*sin(theta4)\*k^2)/k^2;

f5 = (theta4 - 2\*theta5 + theta6 + b\*sin(theta5)\*k^2)/k^2;

f = [f1;f2;f3;f4;f5];

J = [k^-2\*(-2 + b\*cos(theta1)\*k^2),k^-2,0,0,0;k^-2,k^-2\*(-2 + b\*cos(theta2)/k^-2),k^-2,0,0;0,k^-2,k^-2\*(-2 + b\*cos(theta3)/k^-2),k^-2,0;0,0,k^-2,k^-2\*(-2 + b\*cos(theta4)/k^-2),k^-2;0,0,0,k^-2,k^-2\*(-2 + b\*cos(theta5)/k^-2)];

T0 = [theta1;theta2;theta3;theta4;theta5];

T = T0 - pinv(J)\*f;

theta1=T(1);theta2=T(2);theta3=T(3);theta4=T(4);theta5=T(5);

disp("Iteration:"),disp(i),T

if (abs(T-T0)<tol)

break;

endif

i = i+1;

end

|  |  |
| --- | --- |
| **t** | **θ** |
| 0 | 0.7 |
| π/6 | 0.333364 |
| π/3 | -0.284461 |
| π/2 | -0.686856 |
| 2π/3 | -0.602486 |
| 5π/6 | -0.083103 |
| π | 0.5 |