|  |  |  |  |
| --- | --- | --- | --- |
| [ sin(theta6)\*(cos(theta4)\*sin(theta1) - sin(theta4)\*(cos(theta1)\*sin(theta2)\*sin(theta3) + cos(theta1)\*cos(theta2)\*cos(theta3))) + cos(theta6)\*(cos(theta5)\*(sin(theta1)\*sin(theta4) + cos(theta4)\*(cos(theta1)\*sin(theta2)\*sin(theta3) + cos(theta1)\*cos(theta2)\*cos(theta3))) - sin(theta5)\*(cos(theta1)\*cos(theta2)\*sin(theta3) - cos(theta1)\*cos(theta3)\*sin(theta2))) | cos(theta6)\*(cos(theta4)\*sin(theta1) - sin(theta4)\*(cos(theta1)\*sin(theta2)\*sin(theta3) + cos(theta1)\*cos(theta2)\*cos(theta3))) - sin(theta6)\*(cos(theta5)\*(sin(theta1)\*sin(theta4) + cos(theta4)\*(cos(theta1)\*sin(theta2)\*sin(theta3) + cos(theta1)\*cos(theta2)\*cos(theta3))) - sin(theta5)\*(cos(theta1)\*cos(theta2)\*sin(theta3) - cos(theta1)\*cos(theta3)\*sin(theta2))) | - sin(theta5)\*(sin(theta1)\*sin(theta4) + cos(theta4)\*(cos(theta1)\*sin(theta2)\*sin(theta3) + cos(theta1)\*cos(theta2)\*cos(theta3))) - cos(theta5)\*(cos(theta1)\*cos(theta2)\*sin(theta3) - cos(theta1)\*cos(theta3)\*sin(theta2)) | d1\_s\*cos(theta1) + d2\_s\*cos(theta1)\*cos(theta2) + a2\_s\*sin(theta2 - theta3)\*cos(theta1) + d3\_s\*cos(theta1)\*cos(theta2)\*cos(theta3) + d3\_s\*cos(theta1)\*sin(theta2)\*sin(theta3) - endeff\_s\*sin(theta1)\*sin(theta4)\*sin(theta5) + endeff\_s\*sin(theta2 - theta3)\*cos(theta1)\*cos(theta5) - endeff\_s\*cos(theta1)\*cos(theta2)\*cos(theta3)\*cos(theta4)\*sin(theta5) - endeff\_s\*cos(theta1)\*cos(theta4)\*sin(theta2)\*sin(theta3)\*sin(theta5)] |
| [- sin(theta6)\*(cos(theta1)\*cos(theta4) + sin(theta4)\*(sin(theta1)\*sin(theta2)\*sin(theta3) + cos(theta2)\*cos(theta3)\*sin(theta1))) - cos(theta6)\*(cos(theta5)\*(cos(theta1)\*sin(theta4) - cos(theta4)\*(sin(theta1)\*sin(theta2)\*sin(theta3) + cos(theta2)\*cos(theta3)\*sin(theta1))) + sin(theta5)\*(cos(theta2)\*sin(theta1)\*sin(theta3) - cos(theta3)\*sin(theta1)\*sin(theta2))) | sin(theta6)\*(cos(theta5)\*(cos(theta1)\*sin(theta4) - cos(theta4)\*(sin(theta1)\*sin(theta2)\*sin(theta3) + cos(theta2)\*cos(theta3)\*sin(theta1))) + sin(theta5)\*(cos(theta2)\*sin(theta1)\*sin(theta3) - cos(theta3)\*sin(theta1)\*sin(theta2))) - cos(theta6)\*(cos(theta1)\*cos(theta4) + sin(theta4)\*(sin(theta1)\*sin(theta2)\*sin(theta3) + cos(theta2)\*cos(theta3)\*sin(theta1))) | sin(theta5)\*(cos(theta1)\*sin(theta4) - cos(theta4)\*(sin(theta1)\*sin(theta2)\*sin(theta3) + cos(theta2)\*cos(theta3)\*sin(theta1))) - cos(theta5)\*(cos(theta2)\*sin(theta1)\*sin(theta3) - cos(theta3)\*sin(theta1)\*sin(theta2)) | d1\_s\*sin(theta1) + d2\_s\*cos(theta2)\*sin(theta1) + a2\_s\*sin(theta2 - theta3)\*sin(theta1) + d3\_s\*cos(theta2)\*cos(theta3)\*sin(theta1) + endeff\_s\*cos(theta1)\*sin(theta4)\*sin(theta5) + d3\_s\*sin(theta1)\*sin(theta2)\*sin(theta3) + endeff\_s\*sin(theta2 - theta3)\*cos(theta5)\*sin(theta1) - endeff\_s\*cos(theta2)\*cos(theta3)\*cos(theta4)\*sin(theta1)\*sin(theta5) - endeff\_s\*cos(theta4)\*sin(theta1)\*sin(theta2)\*sin(theta3)\*sin(theta5)] |
| -cos(theta6)\*(cos(theta2 - theta3)\*sin(theta5) - sin(theta2 - theta3)\*cos(theta4)\*cos(theta5)) - sin(theta2 - theta3)\*sin(theta4)\*sin(theta6 | sin(theta6)\*(cos(theta2 - theta3)\*sin(theta5) - sin(theta2 - theta3)\*cos(theta4)\*cos(theta5)) - sin(theta2 - theta3)\*cos(theta6)\*sin(theta4) | cos(theta2 - theta3)\*cos(theta5) - sin(theta2 - theta3)\*cos(theta4)\*sin(theta5) | a1\_s + d2\_s\*sin(theta2) - a2\_s\*cos(theta2 - theta3) + d3\_s\*sin(theta2 - theta3) - (endeff\_s\*sin(theta2 - theta3)\*sin(theta4 + theta5))/2 - endeff\_s\*cos(theta2 - theta3)\*cos(theta5) + (endeff\_s\*sin(theta2 - theta3)\*sin(theta4 - theta5))/2 |
| 0 | 0 | 0 | 1 |