```matlab
 1 function E = energy_pend(in1,in2,in3)
 2 %ENERGY_PEND
 3 %     E = ENERGY_PEND(IN1,IN2,IN3)
 4
 5 %     This function was generated by the Symbolic Math Toolbox version 8.2.
 6 %     30-Oct-2021 16:25:17
 7
 8 I1 = in3(:,7);
 9 I2 = in3(:,8);
10 c1 = in3(:,1);
11 c2 = in3(:,2);
12 dth1 = in1(3,:);
13 dth2 = in1(4,:);
14 g = in3(:,9);
15 l1 = in3(:,5);
16 m1 = in3(:,3);
17 m2 = in3(:,4);
18 th1 = in1(1,:);
19 th2 = in1(2,:);
20 t2 = dth1.^2;
21 t3 = cos(th1);
22 t4 = c1.^2;
23 t5 = sin(th1);
24 t6 = th1+th2;
25 t7 = cos(t6);
26 t11 = c2.*t7;
27 t12 = l1.*t3;
28 t13 = t11+t12;
29 t8 = dth1.*t13+c2.*dth2.*t7;
30 t9 = sin(t6);
31 t10 = dth1.*(c2.*t9+l1.*t5)+c2.*dth2.*t9;
32 E = (I1.*t2)./2.0+(m1.*(t2.*t3.^2.*t4+t2.*t4.*t5.^2))./2.0+(I2.*dth2.^2)./2.0+(m2. ↙
*(t8.^2+t10.^2))./2.0-g.*m2.*t13-c1.*g.*m1.*t3;
33
```