```
% Initializing the matrices that will store the bar tensions.
Bar_AC_Tension = [];
Bar_AD_Tension = [];
Bar_AB_Tension = [];

% Initializing the lowest value for the y and z coordinate of point C.
% They are 1 and -1 respectively.
Y_Coord=1;
Z_Coord=-1;

% Looping through every single possible value of y and z from the range
% given in the problem to test possible tensions.
for ii = 1:1:51
    for jj = 1:1:51
        % The system of equations utilized to solve for the tensions of the
        % bars given the y and z coordinates.
        System_of_Equations = [(6/(sqrt(36 + (Y_Coord-2)^2 + (Z_Coord-1)^2))),
6/(sqrt(61)), 2/(sqrt(8));
            (Y_Coord-2)/(sqrt(36 + (Y_Coord-2)^2 + (Z_Coord-1)^2)) , -3/(sqrt(61)),
-2/(sqrt(8));
            ((Z_Coord-1)/(sqrt(36 + (Y_Coord-2)^2 + (Z_Coord-1)^2))), 4/sqrt(61),
0];
        Force_Totals = [80; -20; 30];
        Reduced_Matrix = System_of_Equations\Force_Totals;
        % Getting the calculated values for possible tensions of each bar.
        AC = Reduced_Matrix(1);
        AD = Reduced_Matrix(2);
        AB = Reduced_Matrix(3);
        % Storing those calculated values into a corresponding part of the
        % matrix that it belongs in.
        Bar_AC_Tension(jj,ii) = AC;
        Bar_AD_Tension(jj,ii) = AD;
        Bar_AB_Tension(jj,ii) = AB;
        Z_Coord = Z_Coord + 0.1;
    end
    Y_Coord = Y_Coord + 0.1;
    Z_Coord = -1;
end
% Graphing the points collected on labeled graphs.
Y_Values = 1:0.1:6;
Z_Values = -1:0.1:4;
[X,Y] = meshgrid(Y_Values,Z_Values);

figure;

mesh(X,Y,Bar_AC_Tension);
title('Bar AC Tension');
xlabel('y (m)');
ylabel('z (m)');
zlabel('AC Tension (kN)');

figure;
mesh(X,Y,Bar_AD_Tension);
title('Bar AD Tension');
xlabel('y (m)');
ylabel('z (m)');
zlabel('AD Tension (kN)');

figure;
```

```
mesh(X,Y,Bar_AB_Tension);
title('Bar AB Tension');
xlabel('y (m)');
ylabel('z (m)');
zlabel('AB Tension (kN)');
```