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In[1]:= (*MA39110 / Assignment 1 / 16MA20053 / NER ROHIT *)
       ClearAll["Global`*"];

In[2]:= x0 = 1; xf = 1.4; n = 4; h = (xf - x0) / n
       y0 = 0; yf = 0.0566;
       A = Table[0, {x, 1, n - 1}, {y, 1, n - 1}];
       X = Table[x0 + x * h, {x, 1, n - 1}];
       B = Table[2 * h^2, {x, 1, n - 1}];

Out[2]= 0.1

In[7]:= For[i = 1, i < n, i++,
         {
          A[[i, i]] = -4 * X[[i]]^2;
          If[i ≠ 1, A[[i, i - 1]] = 2 * X[[i]]^2 - h * X[[i]]];
          If[i ≠ n - 1, A[[i, i + 1]] = 2 * X[[i]]^2 + h * X[[i]]];
         }];
       B[[1]] -= y0 * (2 * X[[1]]^2 - h * X[[1]]);
       B[[n - 1]] -= yf * (2 * X[[n - 1]]^2 + h * X[[n - 1]]);

In[10]:= sol = LinearSolve[A, B]

Out[10]= {0.00457418, 0.0166557, 0.0344375}

In[11]:= Show[{Plot[0.5 * Log[x]^2, {x, x0, xf}]},
         {ListLinePlot[Transpose[{X, sol}], PlotStyle → Red]}]
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Out[11]=