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

In[2]:=
```
x0 = 1; xf = 1.4; n = 8; 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]= 0.05

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]= {0.00119469, 0.00454866, 0.00977376, 0.0166267, 0.0249005, 0.0344186, 0.0450288}

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

Out[11]=