In[89]:=
```
(* MA39110 / Assignment 11 / 16MA20053 / NER ROHIT *)
ClearAll["Global`*"];
```

In[90]:=
```
cnt = 0; max = 0;
Model[n0_, r0_] := Module[{n = n0, r = r0},
   x0 = 0; xf = 1; h = (xf - x0) / n;
   X = Table[x0 + x * h, {x, 1, n - 1}];
   XT = Table[x0 + x * h, {x, 0, n}];
   f[x_] = Sin[Pi * x];
   U = Table[f[XT[[x]]], {x, 1, n + 1}];
   UT = U;
   UTT = UT;
   PLT = Table[0, {x, 1, 100}];
   For[j = 1, j ≤ 100, j++, {
     U = UT;
     For[i = 1, i < n, i++,
      {
       im = i + 1;
       If[j ≠ 1, UT[[im]] = r * U[[im - 1]] + 2 (1 - r) U[[im]] + r * U[[im + 1]] - UTT[[im]],
        UT[[im]] = (1 / 2) (r * U[[im - 1]] + 2 (1 - r) U[[im]] + r * U[[im + 1]])];
      }];
     UTT = UT;
     PLT[[j]] = ListLinePlot[Transpose[{XT, UT}], PlotRange → {0, 1}];
    }];
   Show[{PLT[[1 ;; ;; 10]]},
    PlotLabel → Style[StringForm["h = ``, k = ``", h, h * Sqrt[r]], FontSize → 10]]
  ];
```

In[92]:=
```
GraphicsGrid[{{Model[10, 0.5], Model[10, 0.1]}, {Model[20, 0.5], Model[20, 0.1]}}]
```

Out[92]=