Math 242 Lab 2
Newton's Method in Mathematica

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Lab Assignment

- Complete ALL Lab Assignment Questions (with codes, computation results, and brief answers for each “What do you notice?” type of questions in page 3 and 4)
- Submit “lastnameLab02.nb”
  and “lastnameLab02.pdf” **(File->Save As → pdf)** on Canvas
- Deadline: **Tomorrow 11:59pm**
- Correct computation results (without codes) are available on
  Canvas → Files → Lab → Lab_02_Newton's
  Method → lab02_examples_hints

Caution!

- Sometimes “For loop” might take very long time to evaluate and might even crash the computer if the code was incorrect.
- Remember to save the file often!
- **Stop evaluating---click “Alt” + “.” or “command” + “.”**

Review

- “Enter”-next line, “Shift+Enter”-evaluate the cell (run the codes)
- Find a function—click F1 or Help → Wolfram Documentation
- Make a text cell---Format → Style → Text, or “commend”+”1”~”7”
- Stop evaluating---click “Alt” + “.” or “command” + “.”

List and Append

- Define a **list** using curly braces.

  z:={2,4,6,8}
- Double square brackets access the element in the list:

  z[[3]]

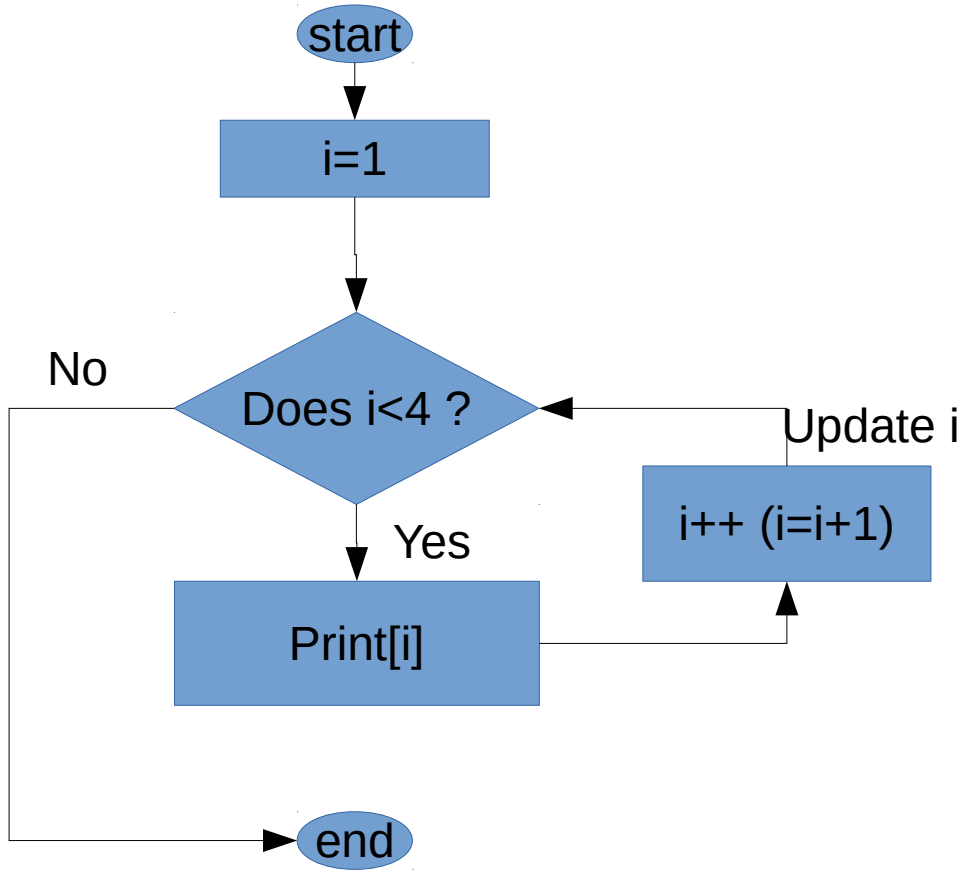
  gives 6, because 6 is the third element in z.
- **Append[z,10]** will make a list by adding the element “10” to the list z.

  To update z, assign this “new list” made by Append[z,10] to z:

  z=Append[z,10]

For Loop

- **For[**
  i=1,
  i<4,
  i++,
  Print[i]]

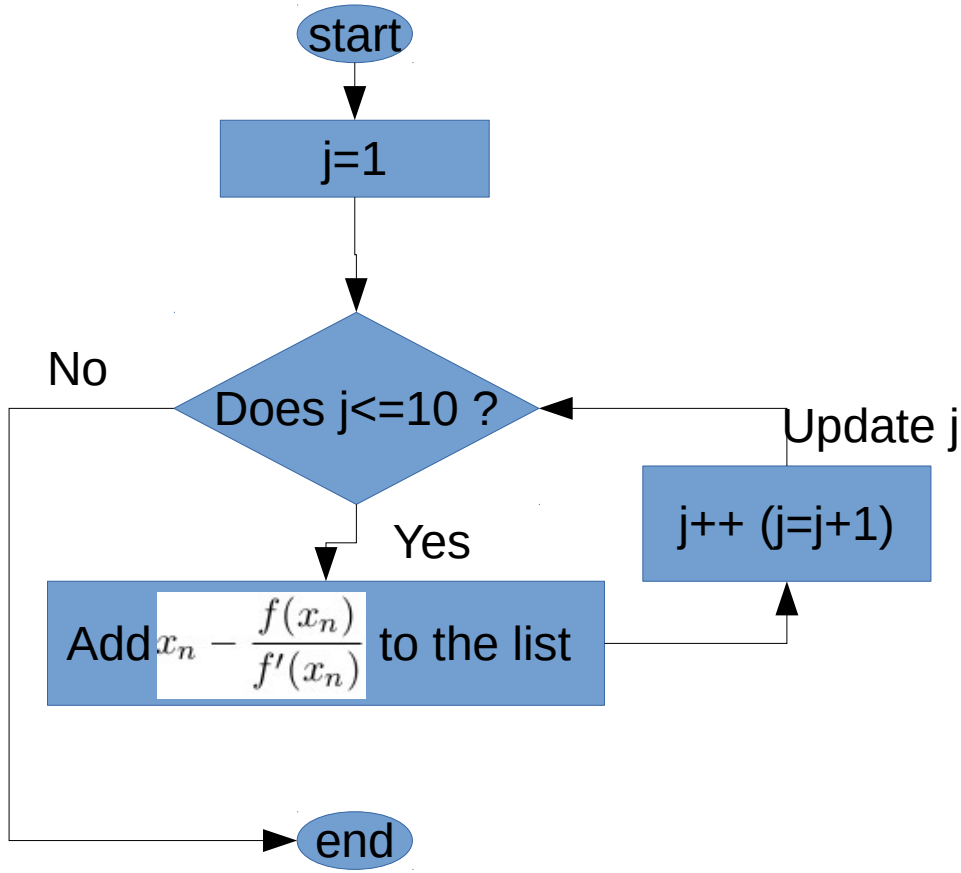


Question 1

- **f[x_]:=x^3-5x**
- **Iterations=10;**
- **z={4.8};**
- **For[**
  j=1,
  j<=iterations,
  j++,
  z = Append[z, z[[j]] – f[z[[j]]]/f'[z[[j]]]]
  ]

jth element of z (x_n)

Remember to add a line “z” or “Print[z]” after this to see the result!



Wrong

- ClearAll
- Clear
- clear[f]
- Clear(f)
- Clear f
- Clear f[x]

Correct

- Clear[f]
- Clear[f,z]
- ClearAll[f]
- ClearAll[f,z]

Wrong

- cos(pix)
- Cos[pix]
- Cos[Pix]
- Cos(Pi*x)

Correct

- Cos[Pi*x]
- Cos[Pi x]
  (needs a space between Pi and x)