Midterm Wednesday 2/13/19

Notecard 3x5 allowed

Exercises:

p 88-89: 3, 4 (just give the method for m-root(a) ), 9

**3. a) Set up the Newton iteration for solving x2 –a = 0, and show it can be written in the form**

**(3.19)**

**4.** Give Newton’s method for finding, with a >0 and m a positive integer. Apply it to finding for m = 3,4,5,6,7,8 to 6 significant digits. (Solve xm – a = 0)

**p 42:**

**5. Explain**

x = 0.0  
while x < 1.0  
 x = x + 0.1;  
 disp([x,sqrt(x)]  
end  
Starting at 0.0, incrementing by 0.1 until 1.0 and displays x and sqrt of x in an array.

**p 54:**

Error = true value – approximate value  
Error () =

Relative Error = error / true value  
Rel () =

1. **Calculate the error, relative error, and number of significant digits in the following approximations :**
2. xT = 28.254, xA = 28.271

Error = 28.271 – 28.254 = 0.017

Rel(xA) = 0.017 / 28.254 = 0.00060168

Sigfig = 5

1. xT = 0.028254, xA = 0.028271  
   Error = 0.028271 – 0.028254 = 0.017

Rel(xA) = 0.017 / 0.028254 = 0.60168

Sigfig = 5

5. Rearrange the function being evaluated to avoid loss-of-significance errors

**(2.23)**

e)

6. Use Taylor polynomial approximations to avoid the loss-of significance errors

6af

p 132-133: 2b, 4 8b, 10, 11, 12, 13

**(4.1)**

**(4.6)**