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AE 227 – Engineering Digital Computation

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**Program 1:**

1. The value of the 168th term in the infinite series is 0.3923. When multiplied by 8 to approximate a value of pi, this is 3.1386. Getting close!
2. After summing the first 300 terms, the estimate of pi is 3.139926. Very close!

**Program 2:**

Output to the command window:

This program will calculate the ratio of the nth and the (n-1)th terms of the Fibonacci series.

Enter "n" >12

0 1 1 2 3 5 8 13 21 34 55 89

The ratio of n and n-1 is 1.61805556.

The number of values in the Fibonacci series necessary to get the value of the Golden Ratio accurate to four decimal places is 14.

The number of values in the Fibonacci series necessary to get the value of the Golden Ratio accurate to eight decimal places is 23.

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**Program 3:**

Output to the command window

This program uses a Maclaurin polynomial to estimate the value of sin(x).

Enter x (radians) > 16.2

Degree of accuracy (number of decimal places) > 5

Sin(16.2) is approximately -0.47242174

The true value of sin(16.2) is -0.47242199

The minimum number of trials needed to reach a 5 decimal place agreement with

the true value of sin(16.2) is 13.

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