LAB-1 QUESTIONS

1.

write a program to approximate the value of e^x *sinx for x=2.0 and 0.2 using the taylor series expansion:

1. The approximate value should be computed using the first 15,30, 45, 60 terms
2. The exact value of e^x *sinx.
3. Find the absolute and relative errors between exact and approximate values.

2.

Consider the recursive relation:
{xn+1=xn+xn-1} x0=1,x1=c.c be any constant
write a program to compute in for all values of n in the range 1<=n<=30.

3.

write a program to compute

f(x)= √(x^2+1) -1
g(x)=x^2/(√(x^2+1) -1) for a Succession of values of x as 8^-1, 8^-2, 8^-3...

Will the computer produce the same results for both the Computations? If not, then find the difference between them?

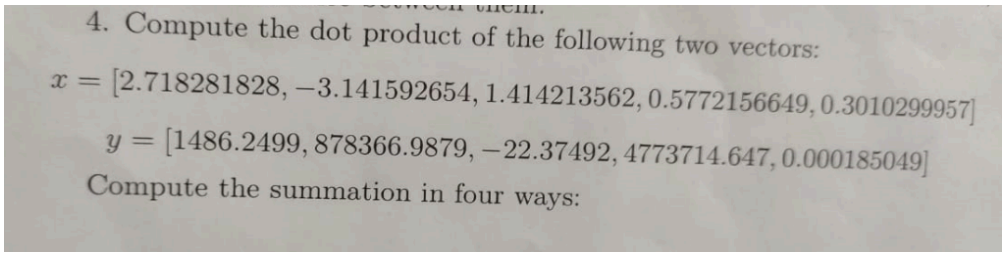
4.

Compute the dot product of the following two vectors:

x= [2.718281828,-3.141592654, 1.414213562, 0.5772156649, 0.3010299957]

y=[1486.2499,878366.9879, -22.37492, 4773714.647, 0.000185049]

Compute the summation in four ways: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Compute the summation in four ways:

1. **Forward order:**

$$\sum_{i=1}^{n} x_i y_i$$

2. **Reverse order:**

$$\sum_{i=n}^{1} x_i y_i$$

3. **Largest-to-smallest order:** Add positive numbers in order from largest to smallest, then add negative numbers in order from smallest to largest, and then add the two partial sums.

4. **Smallest-to-largest order:** Reverse the order of adding in the previous method.

Use both single and double precision for a total of eight answers.