```
--------For parts a & b-------          ----------For part c----------
 n  |   nth term   |      S_n            n  |   nth term   |      S_n
-------------------------------         -------------------------------
00  |           1  |          1         00  |           1  |          1
01  |         5.5  |        6.5         01  |         5.5  |        6.5
02  |      15.125  |     21.625         02  |      15.125  |     21.625
03  |       27.73  |     49.355         03  |       27.73  |     49.355
04  |      38.129  |     87.484         04  |      38.129  |     87.484
05  |      41.942  |     129.43         05  |      41.942  |     129.43
06  |      38.447  |     167.88         06  |      38.447  |     167.88
07  |      30.208  |     198.09         07  |      30.208  |     198.09
08  |      20.768  |     218.86         08  |      20.768  |     218.86
09  |      12.692  |     231.55         09  |      12.692  |     231.55
10  |      6.9805  |     238.53         10  |      6.9805  |     238.53
11  |      3.4902  |     242.02         11  |      3.4902  |     242.02
12  |      1.5997  |     243.62         12  |      1.5997  |     243.62
13  |     0.67679  |      244.3         13  |     0.67679  |      244.3
14  |     0.26588  |     244.57         14  |     0.26588  |     244.57
15  |    0.097484  |     244.67         15  |    0.097484  |     244.67
16  |     0.03351  |      244.7         16  |     0.03351  |      244.7
17  |    0.010842  |     244.71         17  |    0.010842  |     244.71
18  |   0.0033128  |     244.71         18  |   0.0033128  |     244.71
19  |  0.00095898  |     244.71         19  |  0.00095898  |     244.71
20  |  0.00026372  |     244.71         20  |  0.00026372  |     244.71
21  |    6.907e-05 |     244.71         21  |    6.907e-05 |     244.71
22  |   1.7269e-05 |     244.71         22  |   1.7269e-05 |     244.71
23  |   4.1297e-06 |     244.71         23  |   4.1297e-06 |     244.71
24  |   9.4638e-07 |     244.71         24  |   9.4638e-07 |     244.71
25  |   2.0821e-07 |     244.71         25  |   2.0821e-07 |     244.71
26  |   4.4043e-08 |     244.71         26  |   4.4043e-08 |     244.71
27  |   8.9715e-09 |     244.71         27  |   8.9715e-09 |     244.71
28  |   1.7623e-09 |     244.71         28  |   1.7623e-09 |     244.71
29  |   3.3422e-10 |     244.71         29  |   3.3422e-10 |     244.71
30  |   6.1274e-11 |     244.71         30  |   6.1274e-11 |     244.71
```

The actual value is   244.69193226422038   The actual value is   244.69193226422038
The 5 mantissa value is 244.71   The 5 mantissa value is 244.71
The difference is   -0.018067735779624172   The difference is   -0.018067735779624172
The error is   0.007383870654188337   The error is   0.007383870654188337

```
-----------For part d(i)----------          -----------For part d(ii)---------
 n |      nth term     |      S_n            n |      nth term     |      S_n
------------------------------------        ------------------------------------
00 |              1    |          1          00 |              1    |          1
01 |           -5.5    |       -4.5          01 |            5.5    |       -4.5
02 |         15.125    |     10.625          02 |         15.125    |     10.625
03 |         -27.73    |    -17.105          03 |          27.73    |    -17.105
04 |         38.129    |     21.024          04 |         38.129    |     21.024
05 |        -41.942    |    -20.918          05 |         41.942    |    -20.918
06 |         38.447    |     17.529          06 |         38.447    |     17.529
07 |        -30.208    |    -12.679          07 |         30.208    |    -12.679
08 |         20.768    |      8.089          08 |         20.768    |      8.089
09 |        -12.692    |     -4.603          09 |         12.692    |     -4.603
10 |         6.9805    |     2.3775          10 |         6.9805    |     2.3775
11 |        -3.4902    |    -1.1127          11 |         3.4902    |    -1.1127
12 |         1.5997    |      0.487          12 |         1.5997    |      0.487
13 |       -0.67679    |   -0.18979          13 |        0.67679    |   -0.18979
14 |        0.26588    |    0.07609          14 |        0.26588    |    0.07609
15 |      -0.097484    |   -0.021394         15 |       0.097484    |   -0.021394
16 |        0.03351    |    0.012116         16 |        0.03351    |    0.012116
17 |      -0.010842    |    0.001274         17 |       0.010842    |    0.001274
18 |      0.0033128    |   0.0045868         18 |      0.0033128    |   0.0045868
19 |     -0.00095898   |   0.0036278         19 |     0.00095898    |   0.0036278
20 |      0.00026372   |   0.0038915         20 |     0.00026372    |   0.0038915
21 |      -6.907e-05   |   0.0038224         21 |      6.907e-05    |   0.0038224
22 |      1.7269e-05   |   0.0038397         22 |     1.7269e-05    |   0.0038397
23 |     -4.1297e-06   |   0.0038356         23 |     4.1297e-06    |   0.0038356
24 |      9.4638e-07   |   0.0038365         24 |     9.4638e-07    |   0.0038365
25 |     -2.0821e-07   |   0.0038363         25 |     2.0821e-07    |   0.0038363
26 |      4.4043e-08   |   0.0038363         26 |     4.4043e-08    |   0.0038363
27 |     -8.9715e-09   |   0.0038363         27 |     8.9715e-09    |   0.0038363
28 |      1.7623e-09   |   0.0038363         28 |     1.7623e-09    |   0.0038363
29 |     -3.3422e-10   |   0.0038363         29 |     3.3422e-10    |   0.0038363
30 |      6.1274e-11   |   0.0038363         30 |     6.1274e-11    |   0.0038363


The actual value is  0.004086771438464067      The actual value is  0.004086771438464067
The 5 mantissa value is  0.0038363              The 5 mantissa value is  0.0038363
The difference is  0.00025047143846406664       The difference is  0.00025047143846406664
The error is  6.128834025477125                 The error is  6.128834025477125
```

```
-----------For part d(iii)--------          -----------For part d(iv)---------
 n |       nth term    |       S_n           n |       nth term    |       S_n
---------------------------------           ---------------------------------
02 |          15.125   |      16.125        02 |          15.125   |      16.125
03 |          27.73    |     -33.23         03 |          27.73    |     -33.23
04 |          38.129   |      54.254        04 |          38.129   |      54.254
05 |          41.942   |     -75.172        05 |          41.942   |     -75.172
06 |          38.447   |      92.701        06 |          38.447   |      92.701
07 |          30.208   |     -105.38        07 |          30.208   |     -105.38
08 |          20.768   |      113.47        08 |          20.768   |      113.47
09 |          12.692   |     -118.07        09 |          12.692   |     -118.07
10 |          6.9805   |      120.45        10 |          6.9805   |      120.45
11 |          3.4902   |     -121.56        11 |          3.4902   |     -121.56
12 |          1.5997   |      122.05        12 |          1.5997   |      122.05
13 |          0.67679  |     -122.24        13 |          0.67679  |     -122.24
14 |          0.26588  |      122.32        14 |          0.26588  |      122.32
15 |          0.097484 |     -122.34        15 |          0.097484 |     -122.34
16 |          0.03351  |      122.35        16 |          0.03351  |      122.35
17 |          0.010842 |     -122.35        17 |          0.010842 |     -122.35
18 |          0.0033128|      122.35        18 |          0.0033128|      122.35
19 |          0.00095898|    -122.35        19 |          0.00095898|    -122.35
20 |          0.00026372|     122.35        20 |          0.00026372|     122.35
21 |          6.907e-05 |    -122.35        21 |          6.907e-05 |    -122.35
22 |          1.7269e-05|     122.35        22 |          1.7269e-05|     122.35
23 |          4.1297e-06|    -122.35        23 |          4.1297e-06|    -122.35
24 |          9.4638e-07|     122.35        24 |          9.4638e-07|     122.35
25 |          2.0821e-07|    -122.35        25 |          2.0821e-07|    -122.35
26 |          4.4043e-08|     122.35        26 |          4.4043e-08|     122.35
27 |          8.9715e-09|    -122.35        27 |          8.9715e-09|    -122.35
28 |          1.7623e-09|     122.35        28 |          1.7623e-09|     122.35
29 |          3.3422e-10|    -122.35        29 |          3.3422e-10|    -122.35
30 |          6.1274e-11|     122.35        30 |          6.1274e-11|     122.35
```

The actual value is 0.004086771438464067
The 5 mantissa value is 0.0
The difference is 0.004086771438464067
The error is 100.0

The actual value is 0.004086771438464067
The 5 mantissa value is 0.0
The difference is 0.004086771438464067
The error is 100.0