Examination of Programming and Numerical Analysis (A)

Problem 1

The value of s1 and s2 are both 1e+10. It is because the float variable can store only a certain amount of precision. Since 1.0e-8 and 1.0e-1 is very small compared to 1.0e10, the value of s1 and s2 are determined by 1.0e10.

Problem 2

The values of *pointer1, *pointer2, and *(B+4) are 5, 5.2, and 5.4. It is because pointer1 is pointing at the first cell of array B (index 0), pointer2 is pointing at third element of the array B (index 2), and the B+4 is simply a pointer that is pointing at the last element of the array B (index 4).

Problem 3

The value of a, b, c, and d are 0, 0, 0.5, and 0.5 respectively. It is because 1/2 is counted as integer 1 divided by integer 2 which gives integer 0, so a and b are equal to 0. But in c and d, the integer is casted into double before divided by 2 so the answer became 0.5.

Problem 4

The value is 46.5 (using number of intervals of 5). The exact value of the integral is about 44.724 but using trapezoidal method with small number of intervals give answer with big error.

Problem 5

The estimated value of positive root of 2 using Newton-Raphson method with the initial value x=1 and number of iterations is 2 is 1.41667 which has small error from the real value of square root of 2 (1.414213).