Question **3**

Correct

Marked out of 18

(*Regula Falsi Method*). All numerical answers should be rounded to 6-digit floating-point numbers.

Please be advised that you will asked to use an output table and a stopping criterion that have not been used so far in the homework assignments. One of the advantages of the stopping criterion is that users of scientific calculators will be able to use it 'on the fly'; however, among the *disadvantages* may be inability of some models of sci calculators (or poorly configured software) to produce sufficiently accurate values of functions.

Use the Regula Falsi method to find an approximation p_N of the root of the function

$$f(x) = x \sin\left(\frac{1}{x}\right) + 0.06044$$

in $[0.06, 0.09]$ satisfying

$$|f(p_N)| < 10^{-5}$$

Show your work by filling in the following output table (please enter asterisks in any unnecessary input fields):

n	a_n	p_n	b_n	$f(a_n)$	$f(p_n)$
1	0.06 ✔	0.068438 ✔	0.09 ✔	0.0113332 ✔	0.121314 ✔
2	0.068438 ✔	0.0858447 ✔	0.09 ✔	0.121314 ✔	-0.0077242 ✔
3	0.068438 ✔	0.0848027 ✔	0.0858447 ✔	0.121314 ✔	0.00114462 ✔
4	0.0848027 ✔	0.0849372 ✔	0.0858447 ✔	0.00114462 ✔	-7.26649e-0 ✔
5	0.0848027 ✔	0.0849292 ✔	0.0849372 ✔	0.00114462 ✔	-5.87221e-0 ✔
6	* ✔	* ✔	* ✔	* ✔	* ✔
7	* ✔	* ✔	* ✔	* ✔	* ✔

Accordingly,

$p_N \doteq$ 0.0849292 ✔ .

Check

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