



The error as a function of the iteration n is: $\text{error} < |c-a| / ((\sqrt{5}-1)/2)^n$. After each iteration, the new interval shrinks by $(3-\sqrt{5})/2$ of its old length. This happens regardless of which triplet is assigned because $(3-\sqrt{5})/2$ is the same as $(1-(3-\sqrt{5})/2)^2$.

The given algorithm stop assigning new triplets once the computed values of $f(x)$ and $f(b)$ are equal. This occurs as soon as $-\cos(x^k)$ and $-\cos(b)$ are rounded to -1. As discovered and discussed in Assignment 1, $\cos(x)$ will be rounded to 1 for any absolute value smaller than or equal to $2^{-26.5}$. Therefore, a larger k will reduce the accuracy by stopping the algorithm as soon as x^k is less than or equal to $2^{-26.5}$. Until that occurs, the accuracy of x generally decreases with iterations, and the new x does not depend on k .