Exercise 2. Use the Intermediate Value Theorem to find an interval of length one that contains a root of the equation. (a) $x^5 + x = 1$ (b) $\sin x = 6x + 5$ (c) $\ln x + x^2 = 3$.

Solution, part (a).

Solution, part (b).

Solution, part (c).

Exercise 4. Consider the equations in Exercise 2. Apply two steps of the Bisection Method to find an approximate root within 1/8 of the true root.

Solution, part (a). We will organize our work in the tabular form shown in the textbook:

k	a_k	$f(a_k)$	c_k	$f(c_k)$	b_k	$f(b_k)$
0						
1						
2						

After two steps, our best estimate for the root is

Solution, part (b).

Solution, part (c).

Exercise 5. Consider the equation $x^4 = x^3 + 10$.

(a) Find an interval $[a, b]$ of length one inside which the equation has a solution.

(b) Starting with $[a, b]$, how many steps of the Bisection Method are required to calculate the solution within 10^{-10}? Answer with an integer.

Solution, part (a).

Solution, part (b).