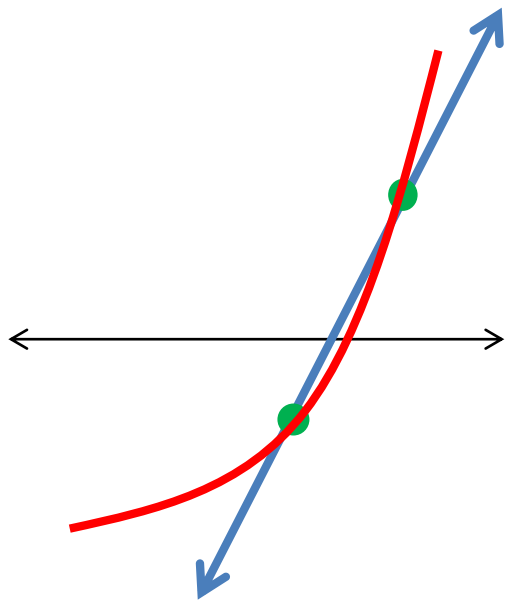
# Programming the Secant Method

# The Secant Method: Review

The secant method is used to approximate the root of a function:



1. Find two points that are fairly close to each other and to the x-intercept of the function.
2. Find the equation of the connecting line.
3. Find where that line crosses the axis.
4. Repeat using the new point and one of the old points.

# Final Problem

Write a program Secant(f, a, b) that will use the secant method to approximate the root of a pre-loaded function f, starting with x = a and x = b. The program should find the root to within a tolerance of 0.00001.

Oh – and don't forget to test your code.

Please save this program for future use!

# The Amazing Thing

Big deal, we found a root.

But what this enables us to do is to solve *any* equation. For example,

$$3x^2 - 2\sin x = e^{2x} - x \qquad \text{(not solvable)}$$

can be changed into…

$$3x^2 - 2\sin x + x - e^{2x} = 0$$

We can find its zeroes/roots using our program and thereby solve the equation.