

## Rule of Double False Position

from H. Eves "Great Moments in Mathematics (before 1650)"

15.3. One of the oldest methods for approximating the real roots of an equation is the rule known as *regula duorum falsorum*, often called the rule of *double false position*. This method seems to have originated in India and was used by the Arabians. In brief, and in modern form, the method is this: Let  $x_1$  and  $x_2$  be two numbers lying close to and on each side of a root  $x$  of the equation  $f(x) = 0$ . Then the intersection with the  $x$ -axis of the chord joining the points  $(x_1, f(x_1))$ ,  $(x_2, f(x_2))$  gives an approximation  $x_3$  to the sought root (see Figure 54). Show that

$$x_3 = \frac{x_2 f(x_1) - x_1 f(x_2)}{f(x_1) - f(x_2)}.$$

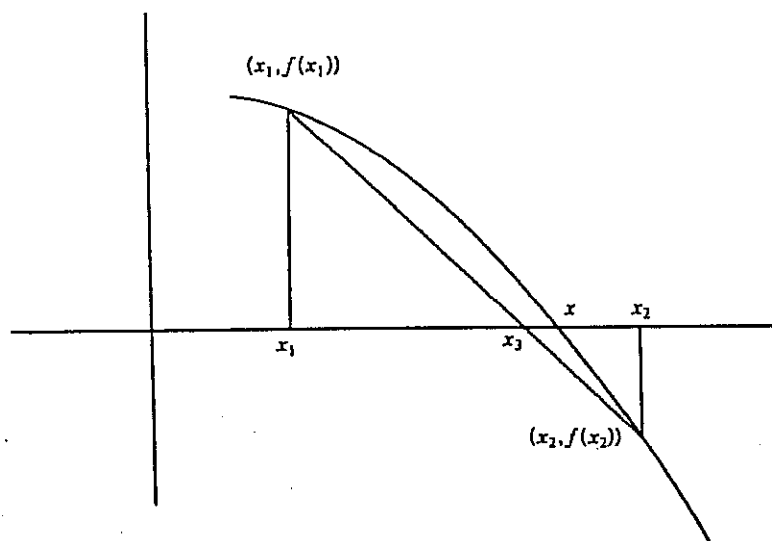


FIG. 54