

Multiple-Choice Test

Secant Method Chapter 03.05

1. The secant method of finding roots of nonlinear equations falls under the category of _____ methods.
 - (A) bracketing
 - (B) graphical
 - (C) open
 - (D) random
2. The secant method formula for finding the square root of a real number R from the equation $x^2 - R = 0$ is
 - (A) $\frac{x_i x_{i-1} + R}{x_i + x_{i-1}}$
 - (B) $\frac{x_i x_{i-1}}{x_i + x_{i-1}}$
 - (C) $\frac{1}{2} \left(x_i + \frac{R}{x_i} \right)$
 - (D) $\frac{2x_i^2 + x_i x_{i-1} - R}{x_i + x_{i-1}}$
3. The next iterative value of the root of $x^2 - 4 = 0$ using secant method, if the initial guesses are 3 and 4, is
 - (A) 2.2857
 - (B) 2.5000
 - (C) 5.5000
 - (D) 5.7143
4. The root of the equation $f(x) = 0$ is found by using the secant method. Given one of the initial estimates is $x_0 = 3$, $f(3) = 5$, and the angle the secant line makes with the x -axis is 57° , the next estimate of the root, x_1 , is
 - (A) -3.2470
 - (B) -0.24704
 - (C) 3.247
 - (D) 6.2470

5. For finding the root of $\sin x = 0$ by the secant method, the following choice of initial guesses would not be appropriate.

(A) $\frac{\pi}{4}$ and $\frac{\pi}{2}$

(B) $\frac{\pi}{4}$ and $\frac{3\pi}{4}$

(C) $-\frac{\pi}{2}$ and $\frac{\pi}{2}$

(D) $\frac{\pi}{3}$ and $\frac{\pi}{2}$

6. When drugs are given orally to a patient, the drug concentration c in the blood stream at time t is given by a formula

$$c = Kte^{-at}$$

where K is dependent on parameters such as the dose administered while a is dependent on the absorption and elimination rates of the drug. If $K = 2$ and $a = 0.25$, and t is in seconds and c is in mg/ml , the time at which the maximum concentration is reached is given by the solution of the equation

(A) $2te^{-0.25t} = 0$

(B) $2e^{-0.25t} - 2te^{-0.25t} = 0$

(C) $2e^{-0.25t} - 0.5te^{-0.25t} = 0$

(D) $2te^{-0.25t} = 2$

For a complete solution, refer to the links at the end of the book.