Self-assessment

1. **The condition of convergence of Fixed Point Iteration method is**

      a. $|\phi'(x)| > 1$ b. $|\phi'(x)| < 1$ c. $|\phi'(x)| = 1$ d. $|\phi'(x)| = 0$

2. Newton Raphson method is also called as

a. Tangent method   b. Secant method   c. Chord method   d. Diameter method

3. The Order of convergence of Regula-Falsi method is

a. 2.312 b. 2.231 c. 1.618 d. 1.321

4. We can use Newton-Raphson method to solve

a. Algebraic equations only

b. Transcendental equations only

c. Both algebraic and Transcendental Equations

d. Both algebraic and transcendental and also used when the roots are complex

5. Which one of the following statements is false?

a. Newton Raphson method has quadratic convergence

b. The method of Regula-Falsi converges faster than the secant method

c. The Bisection method converges slowly

6. Newton-Raphson method converges if

a. $\left|\dfrac{f'(x)f''(x)}{[f(x)]^2}\right| < 1$ b. $\left|\dfrac{f(x)f''(x)}{[f'(x)]^2}\right| < 1$ c. $\left|\dfrac{f(x)f'(x)}{[f''(x)]^2}\right| < 1$ d. none of these

7. If the initial guess is 3, then the next iterative value of the root of $x^2 - 4 = 0$ using the Newton-Raphson method is

(A) 1.5

(B) 2.067

(C) 2.167

(D) 3.000

8. To find the smallest root of the equation $f(x) = x^3 - x - 1 = 0$ by Iteration method, f(x) must be rewritten as

a. $x = x^3 - 1$ 　　　　b. $x = (x+1)^{\frac{1}{3}}$ 　　　　c. $x = \frac{1}{x^2-1}$ 　　　　d. $x = \frac{x+1}{x^2}$

9. **The Order of convergence of Newton-Raphson method is**

a. 1 　　　　b. 1.62 　　　　c. 2 　　　　d. 2.16

10. Find the correct statement

a. The bisection method has quadratic convergence

b. The Iteration method is a self-correction method

c. The equation $x^3 - 2x - 5 = 0$ has two positive roots

d. Newton-Raphson method is also known as the method of chords.

Answers

1. b
2. a
3. c
4. c
5. b
6. b
7. c
8. b
9. c
10. b