

Multiple-Choice Test

Chapter 01.01

Introduction to Numerical Methods

1. Solving an engineering problem requires four steps. In order of sequence, the four steps are
 - (A) formulate, solve, interpret, implement
 - (B) solve, formulate, interpret, implement
 - (C) formulate, solve, implement, interpret
 - (D) formulate, implement, solve, interpret
2. One of the roots of the equation $x^3 - 3x^2 + x - 3 = 0$ is
 - (A) -1
 - (B) 1
 - (C) $\sqrt{3}$
 - (D) 3
3. The solution to the set of equations
$$25a + b + c = 25$$
$$64a + 8b + c = 71$$
$$144a + 12b + c = 155$$
most nearly is $(a, b, c) =$
 - (A) (1,1,1)
 - (B) (1,-1,1)
 - (C) (1,1,-1)
 - (D) does not have a unique solution.
4. The exact integral of
$$\int_0^{\frac{\pi}{4}} 2 \cos 2x dx$$
is most nearly
 - (A) -1.000
 - (B) 1.000
 - (C) 0.000
 - (D) 2.000

5. The value of $\frac{dy}{dx}(1.0)$, given $y = 2\sin(3x)$ most nearly is
- (A) -5.9399
 - (B) -1.980
 - (C) 0.31402
 - (D) 5.9918
6. The form of the exact solution of the ordinary differential equation $2\frac{dy}{dx} + 3y = 5e^{-x}$, $y(0) = 5$ is
- (A) $Ae^{-1.5x} + Be^x$
 - (B) $Ae^{-1.5x} + Be^{-x}$
 - (C) $Ae^{1.5x} + Be^{-x}$
 - (D) $Ae^{-1.5x} + Bxe^{-x}$

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