

# 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, model, solve, implement
  - (B) formulate, solve, model, implement
  - (C) formulate, model, implement, solve
  - (D) model, formulate, implement, solve

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.
  - (E)

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

- (E)
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.