

Multiple Choice Test – Introduction to Numerical Methods
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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

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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

$$2\frac{dy}{dx} + 3y = 5e^{-x}, \quad y(0) = 5 \text{ is}$$

- (A) $Ae^{-1.5x} + Be^x$
- (B) $Ae^{-1.5x} + Be^{-x}$
- (C) $Ae^{1.5x} + Be^{-x}$
- (D) $Ae^{-1.5x} + Bxe^{-x}$

