



Subject: Numerical methods

Chapter: Unit 1

Category: Practice questions

1. We are given an approximate value of π is $22/7 = 3.1428571$ and true value is 3.1415926. Calculate absolute, relative and percentage errors?

2. If the actual value of shaft of the diameter is 1.605 inches and the shaft is measured and found to be 1.603 inches. Determine the absolute and relative error.

3. Increase 150 by 10 % and decrease the same by 15 %. Find the new number in each case.

4. A car which was advertised for sale for \$95000, was ultimately sold for \$83600. Find the percent reduction in the price.

5. Identify n for the following set of data when $F(1.8)$ is asked.

x	0	0.5	1	1.5	2
$f(x)$	0.3989	0.3521	0.2420	0.1295	0.0540

6. Find the value of $f(2)$ using linear interpolation method. Given that $f(-1) = 4$ and $f(3) = 6$

7. Find the root of equation $x^3 - 4x - 9 = 0$ using the bisection method in four stages.

8. Find a root of an equation $3x^2 = 5x + 2$ in the interval $[0, 3]$ using Bisection method.

9. Find a root correct to 3 decimal places of the equation $x^3 - 3x - 5 = 0$ by using the Newton Raphson method.

10. Use Newton's Method to determine x_2 for $f(x) = x^3 - 7x^2 + 8x - 3$ if $x_0 = 5$.

11. Consider the following table of data:

Day	Height
1	0
3	4
5	8
7	12
9	16

Based on this chart, calculate the estimated height of the plant on the fourth day.

12. Determine the root of the given equation $x^2 - 3 = 0$ for $x \in [1, 2]$

13. Estimate the positive root of the equation $x^2 - 2 = 0$ by using Newton's method. Begin with $x_0 = 2$ and compute x_1 .



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