Solutions to Comprehensive Math Review Problems

Civil Engineering Licensure Exam – Mock Exam (Day 7)

February 25, 2025

Solutions

1. Solve for x in the equation:

$$2x^2 - 5x + 3 = 0$$

Solution: Solve $2x^2 - 5x - 3 = 0$

2. Evaluate:

$$\log_2 16$$

Solution: Algebra 2 Chapter 16.3 Exercises 15-21 Solving Logarithmic Equations

3. Find the sum of the first 10 terms of an arithmetic sequence where $a = 5$ and $d = 3$. **Solution:** An Arithmetic Sequence and Logarithm Problem

4. Solve for x in the equation $\tan x = 1$ within $0^\circ \leq x \leq 360^\circ$. **Solution:** Solving Trigonometric Equations By Finding All Solutions

5. Find the distance between the points $(1, 2)$ and $(4, 6)$. **Solution:** Finding the Distance Between Two Points

6. Solve the system of equations:

$$\begin{cases} 3x + 2y = 12 \\ x - y = 4 \end{cases}$$

Solution: Solving Systems of Equations By Elimination & Substitution With 2 Variables

7. Compute:

$$\lim_{x \to 2} \frac{x^2 - 4}{x - 2}$$

Solution: Limit of $\frac{x^2-9}{x-3}$ as x Approaches 3

8. Differentiate:
$$f(x) = x^3 - 4x^2 + 2x - 5$$
Solution: Basic Differentiation Rules - Power Rule Example

9. Find the equation of the line passing through $(2, 5)$ with slope $m = -3$.
Solution: How To Write The Equation of a Line Given The Slope and a Point

10. Evaluate:
$$\int (3x^2 - 5x + 2)\, dx$$
Solution: Find the Indefinite Integral for $3x^2e^{2x}$ dx