Civil Engineering Licensure Exam – Mock (Day 1)

Algebra

1. **MCQ 1: Solve for x in the equation**

$$3x - 7 = 2x + 5$$

   - *Video: "Solve 3x-7=2x+5: Linear Equation Video Solution"*
   - `https://www.youtube.com/watch?v=2rsEs78X5Gw`

2. **MCQ 2: Solve for x in the quadratic equation**

$$x^2 - 5x + 6 = 0$$

   - *Video: "How to Solve $x^2 - 5x + 6 = 0$ by Factoring"*
   - `https://www.youtube.com/watch?v=ri5PJ7b6594`

3. **MCQ 3: Which of the following represents an exponential function?**

   - *Video: "Finding an Exponential Function"*
   - `https://www.youtube.com/watch?v=r0B9hh8qlSU`

4. **MCQ 4: If $f(x) = 4x - 7$, find $f(3)$**

   - *Video: "Evaluating a Linear Function"*
   - `https://www.youtube.com/watch?v=pJjcqlGUPg4`

5. **MCQ 5: Solve the inequality**

$$2x + 3 < 7$$

   - *Video: "How To Solve Linear Inequalities, Basic Introduction, Algebra"*
   - `https://www.youtube.com/watch?v=DrZJKdXlZ3I`

6. **Problem 1: Solve the system of equations**

$$\{\, 2\ x + 3y = 12x - y = 4$$

   - *Video: "Learn to solve a system of equations using substitution"*
   - `https://www.youtube.com/watch?v=-mZZ6iPwQpE`

7. **Problem 2: A projectile's height (in meters) at time t seconds is given by**

$$h(t) = -5t^2 + 20t + 15$$

   Find the time when the projectile reaches its maximum height.

- *Video: "Projectile Motion: Finding the Maximum Height and the Range"*
- `https://www.youtube.com/watch?v=Mp8bz5P1m4I`

8. **Problem 3: Find the domain of the function**

$$f(x) = \frac{1}{x-3}$$

- *Video: "How To Find The Domain of a Function - Interval Notation"*
- `https://www.youtube.com/watch?v=djT6-YamHaA`

9. **Problem 4: If $g(x) = x^2 - 4x + 7$, find the vertex of the function.**

- *Video: "Finding the vertex of a quadratic function"*
- `https://www.youtube.com/watch?v=V2udel2WylU`

10. **Problem 5: A company's revenue function is given by**

$$R(x) = 50x - x^2$$

Find the value of x that maximizes the revenue.

- *Video: "Find Maximum Revenue of a Quadratic Function"*
- `https://www.youtube.com/watch?v=yLvwXccNw2o`