

Course ID: MATH101 Course Name: Advanced Algebra Test Name: Problem-Solving and Proofs. Test Type: Essay

Instructions:

Solve the following problem and provide a detailed explanation of your solution, including all necessary steps and justifications.

Problem:

A quadratic function is given by the equation:

$$f(x) = ax^2 + bx + c$$

Given that the function passes through the points (1, 4), (2, 7), and (3, 12), determine the values of  $a$ ,  $b$ , and  $c$ . Show all steps in your solution.

Time allowed: 60 minutes