Algebra 1
Unit 7 – Project
Quadratic Functions

Instructions: Answer **ALL** questions. You **MUST** attach all graph/sketches and show all calculations and/or explanations to justify your answers. If you are asked to provide a graph, you **MUST** use graph paper or a graphing utility/software. Upload the completed project as a Word or PDF file.

1. State the interval on which each function is increasing and decreasing.

   a. $f(x) = -2.5x^2$

   b. $f(x) = 6x^2$

   c. $f(x) = -9x^2$

2. Graph each function below and state the: i. y-intercept
   ii. vertex
   iii. axis of symmetry
   iv. minimum or maximum value

   a. $g(x) = (x + 8)^2 + 1$

   b. $h(x) = (x - 5)^2 - 2$

   c. $g(x) = -x^2 + 4x + 5$

   d. $h(x) = -3x^2 + 7x + 1$

3. Write a function h to model the vertical motion for *initial velocity: 54ft/s; initial height 7ft*, given $h(t) = -16t^2 + v_0 t + h_0$. Find the maximum height.

4. Write a quadratic function to represent the area of the rectangle below, then state the:
   i. y-intercept
   ii. x-intercept
   iii. vertex
   iv. axis of symmetry
   v. minimum or maximum value

   $2x - 3$

   $x + 1$