

Foundations 110 Assignment – Graphing and Factored Form

Use a graphing calculator for this section

1. A water arch at a splash pad is defined by the following quadratic function where 'x' represents the horizontal distance the water travelled (in meters) and f(x) represents the vertical height the water has travelled (in meters):

$$f(x) = -0.15x^2 + 3x$$

Graph the function, and state the domain and range for the context of the problem.

2. A skiing coach analyzed a skier's best jump and found his jump modelled the following equation:

$$y = -4.9x^2 + 20x + 1$$

If 'x' was the horizontal distance (in meters) and 'y' was the vertical distance (in meters), what was the maximum height the skier had for this jump? How far away from the starting point was the skier before landing?

Without graphing technology for this section

3. For each quadratic function
 - I. Write out the equation in factored form
 - II. Determine the x-intercepts
 - III. Determine the y-intercepts
 - IV. Determine the equation of the axis of symmetry
 - V. Determine the coordinates of the vertex
 - VI. Sketch the graph
 - a) $f(x) = x^2 + 6x + 8$
 - b) $g(x) = 2x^2 - 12x - 14$
 - c) $h(x) = 3x^2 - 12x + 12$
 - d) $j(x) = x^2 - 8x + 13$ (Use partial factoring, you do not need to find the x-intercepts here)
4. Determine the quadratic function that defines a parabola with x-intercepts $x = 1$ and $x = 3$ and y-intercept $y = -6$. Sketch the function and state its domain and range.
5. How many zeroes can a quadratic function have? Sketch each type. (You don't need an equation for this part)