

Section 2.1 Quadratic Functions: Exploring Forms

Use the following quadratic functions to answer questions 1 – 5.

A $y = x^2 + 6x + 8$

B $y = (x - 3)^2 + 7$

C $y = (x - 3)(x + 5)$

D $y = -2(x + 4)^2 - 1$

E $y = -(x + 1)(x + 5)$

F $y = -x^2 + x - 3$

- Identify the algebraic form used to express each function: standard form, factored form, or vertex form.
- For those functions in the standard form, identify
 - the values of a , b , and c
 - the direction of opening
 - whether the vertex is a maximum or a minimum
 - the y -intercept
- For those functions in the factored form, identify
 - the direction of opening
 - the x -intercepts
 - the coordinates of the vertex
 - whether the vertex is a maximum or a minimum
 - the axis of symmetry
 - the y -intercept
- For those in vertex form, identify
 - the direction of opening
 - the coordinates of the vertex
 - whether the vertex is a maximum or a minimum
 - the axis of symmetry
 - the y -intercept
- Sketch a graph of each function, without graphing technology.
 - Use graphing technology to help you identify the intervals for which each function is
 - positive or negative
 - increasing or decreasing
- Determine an equation for each quadratic function.
 - The y -intercept is 2 and the vertex is $(4, -2)$.
 - The x -intercepts are 3 and 7 and the minimum value is -8 .
 - The vertex is $(-2, 4)$ and one x -intercept is 0.
- This graph shows the height–distance relationship of a baseball hit for a home run.

 - What is the approximate maximum height reached?
 - What is the approximate distance of the home run?
 - Write a quadratic function that approximates the trajectory of the home run. (It will not be the same as the graph because the ball falls faster than it rises.)