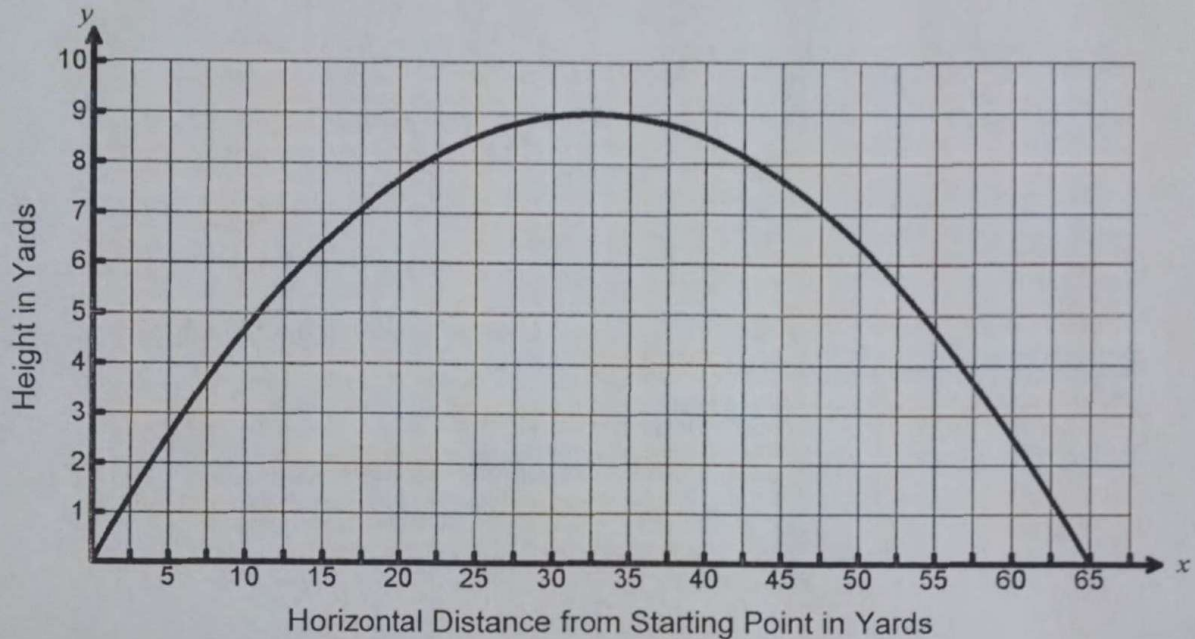


The Soccer Kick

The graph below represents the relationship between the height (in yards) and the horizontal distance (also in yards) of a soccer ball after being kicked. Use the graph to answer the questions that follow (1 – 4).

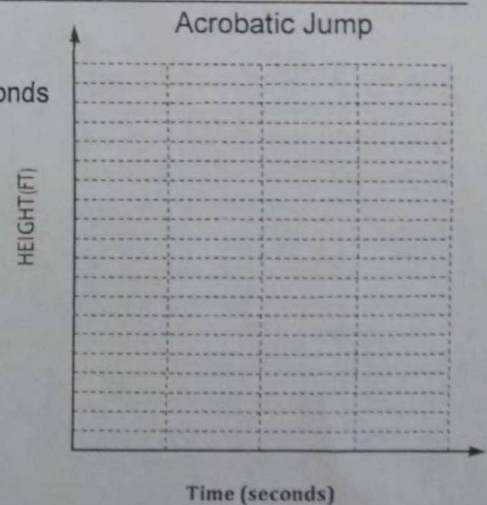


1. When the ball lands, how far is it from the starting point?
 2. What does the point (32.5, 9) represent in this problem situation?
 3. If a player is standing directly underneath the ball when it reaches a height of 6 yards, how far is the player from the starting point?
 4. What is the domain for this function? What is the range of this function?
-
5. The height in feet of an acrobat who jumps from a trampoline 10 feet in the air to a large mat on the ground can be modeled by the function $f(x) = -8x^2 + 16x + 10$, where x is the time in seconds after the acrobat jumps. Draw the graph (both scales are 1). Find the maximum height of the acrobat and the time it takes to reach this height. Then find how long the acrobat is in the air.

Maximum height _____

Time to reach maximum height _____

Time in the air _____



Connecting Factoring to Parabolas

$$Ax^2 + Bx + C$$

Factor each trinomial and fill in the missing information for each. #1, #3, and #4 should be done without a calculator and #2, #5 and #6 should be done with the use of the calculator:

1. $y = x^2 + 8x + 12 =$

Factors: _____

Zeros: _____

Vertex _____

Axis of Symmetry _____

Minimum or Maximum Value _____

y-intercept: _____

Domain: _____ Range: _____

2. $y = x^2 + x - 6 =$

Factors: _____

Zeros: _____

Vertex _____

Axis of Symmetry _____

Minimum or Maximum Value _____

y-intercept: _____

Domain: _____ Range: _____

3. $y = x^2 + 4x - 5 =$

Factors: _____

Zeros: _____

Vertex _____

Axis of Symmetry _____

Minimum or Maximum Value _____

y-intercept: _____

Domain: _____ Range: _____

4. $y = x^2 + 6x - 8 =$

Zeros: _____

Vertex _____

Axis of Symmetry _____

Minimum or Maximum Value _____

y-intercept: _____

Domain: _____ Range: _____

5. $y = x^2 - 7x - 10$

Zeros: _____

Vertex _____

Axis of Symmetry _____

Minimum or Maximum Value _____

y-intercept: _____

Domain: _____ Range: _____

6. $y = x^2 + 2x - 8 =$

Factors: _____

Zeros: _____

Vertex _____

Axis of Symmetry _____

Minimum or Maximum Value _____

y-intercept: _____

Domain: _____ Range: _____