

Name: _____

Unit 9

Date: _____

Lesson 2

Do Now: Using your calculator, complete the table for $f(x) = x^2 - 10x + 21$

x	y

- a. Identify the roots.
- b. What is the vertex?
- c. Is the vertex maximum or minimum?
- d. What is the y-intercept?



***Extra credit: Create a poster, power point, or model to display real-life application of quadratic functions. The project is worth up to 3 points. **Be Creative!** Project is due _____

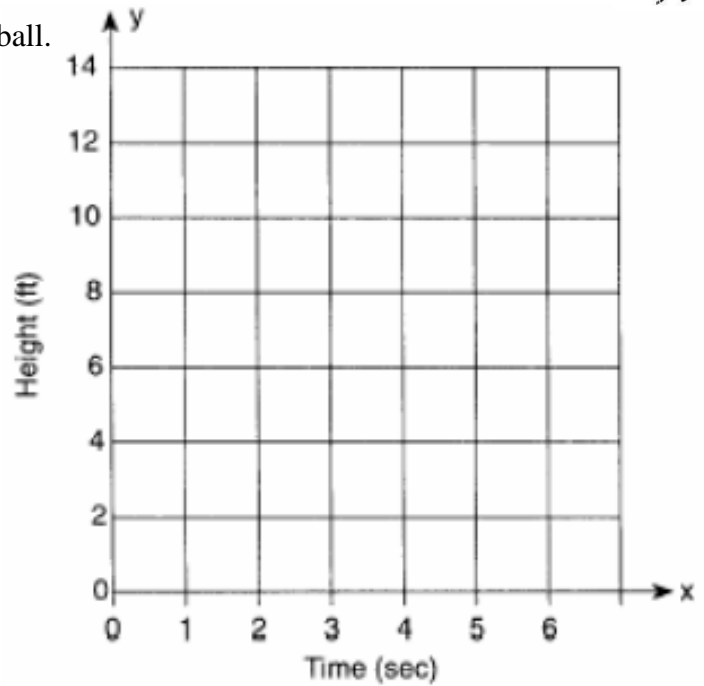
Aim: Graphing Real Life Quadratic Equations



1. Joe Flacco tossed a football to Rob Bolden during Super Bowl 47. The arch that the ball makes is in the shape of a parabola with equation $h(t) = -t^2 + 6t$. Where t represents the time, in seconds and $h(t)$ represents the height, in feet.

a) Fill in the table and graph the path of the football.

x	y



b) At what time does the ball start and end? What are these points called?

c) At what point does the football start to decline again?

d) Is this a maximum or minimum point?

e) What is the maximum height of the football in feet?

f) Explain the meaning of the vertex in the context of the problem.

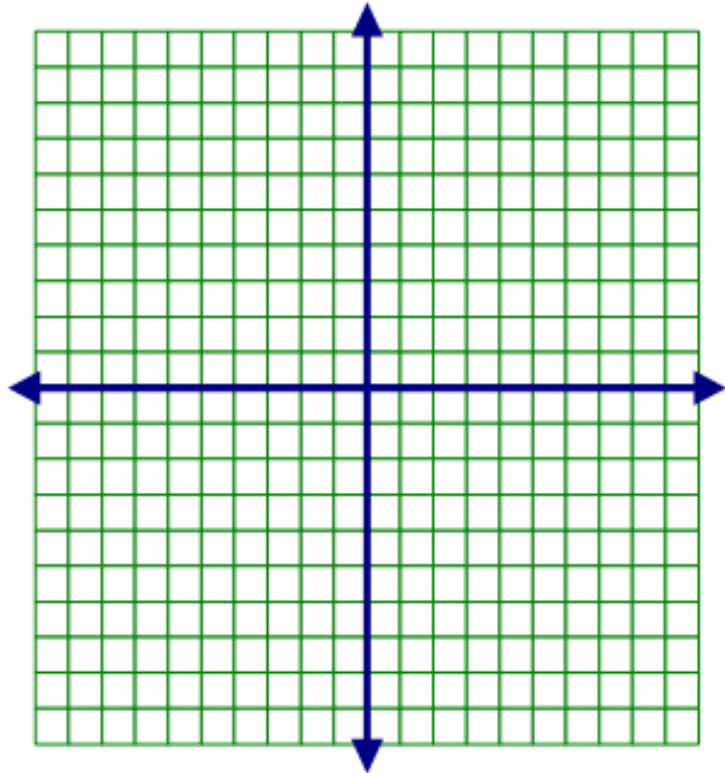
g) State the increasing interval.

h) State the decreasing interval.

1. Lori and Anthony are taking Lia and Ryan to the park. At the park there is a swing that hangs in the shape of a parabola with the equation $f(x) = x^2 - 9$. There is a fence behind the swing.

a. Graph the shape of the swing.

x	y

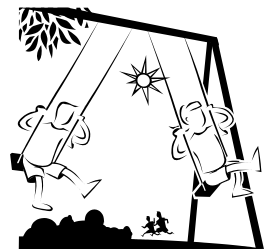


b. Looking at the graph, where does the swing hit the fence?

c. What is the lowest point of the swing?

d. State the increasing interval.

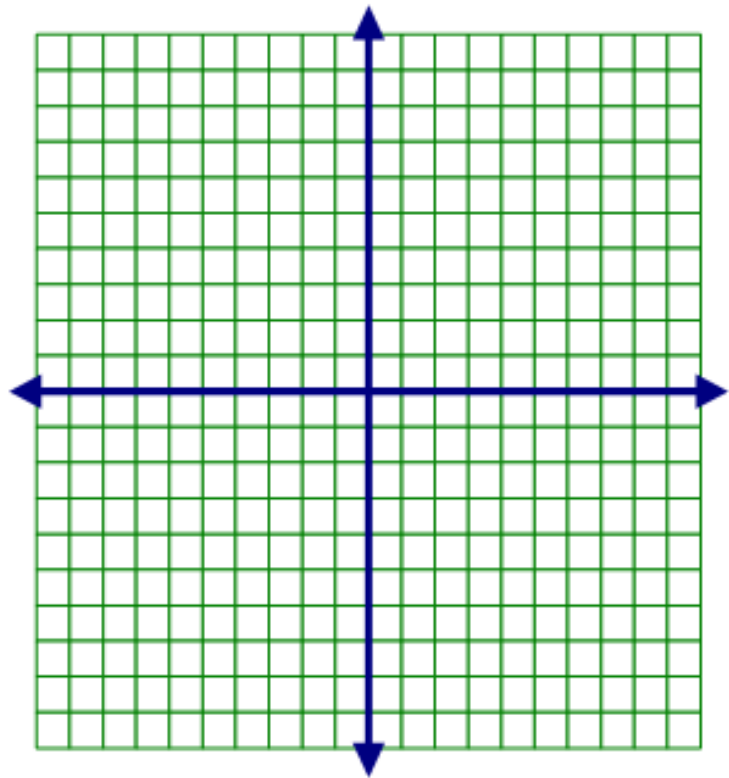
e. State the decreasing interval.



2. Michael, Andrew, Luca, Lia, and Ryan are digging a hole in the sand at ToBay beach. The side-view of the hole is in the shape of the quadratic equation $f(x) = x^2 - 2x - 3$

a) Graph the side-view of the hole.

x	y

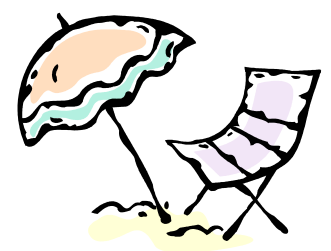


b) How wide is the opening of the hole in feet?

c) How deep is the hole in feet?

d) If the y-axis is an umbrella pole that is in the ground, how many feet below ground level does the umbrella hit the hole?

e) State the domain & range in interval notation.



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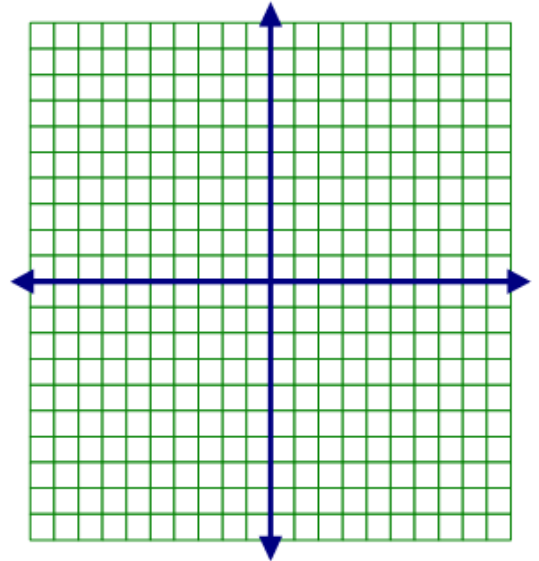
Unit 9

Lesson 2

HW# _____

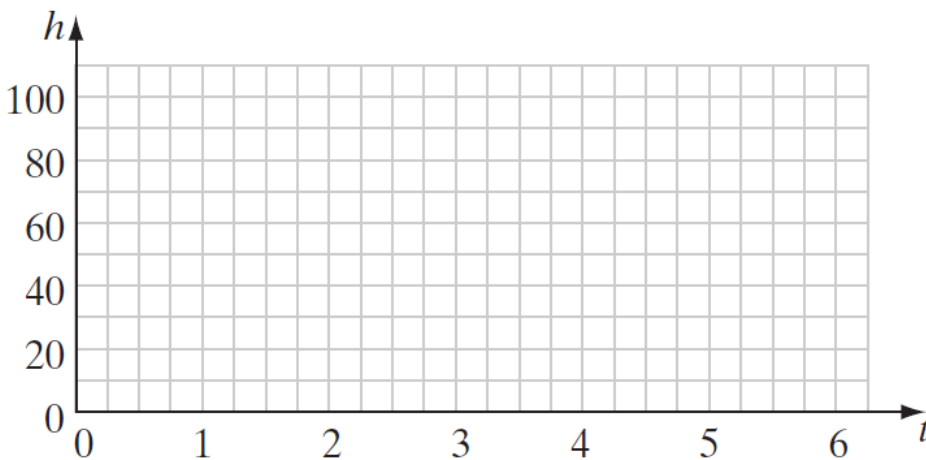
1. $y = x^2 - 2x$ ($-2 \leq x \leq 4$)

- a) Graph the quadratic function using the integral values for x indicated in parenthesis.
- b) Write the equation of the axis of symmetry of the graph.
- c) Write the coordinates of the turning point of the graph.



2. A batter hit a baseball at a height 3 feet off the ground, with an initial vertical velocity of 64 feet per second. Let x represent the time in seconds, and y represent the height of the baseball. The height of the ball can be determined over a limited period of time by using the equation $y = -16x^2 + 64x + 3$.

- a) Make a table using integral values of x from 0 to 4 to find values of y .
- b) Graph the equation on the coordinate grid below. Let one horizontal unit = $\frac{1}{4}$ second, and one vertical unit = 10 feet.



- c) If the ball was caught after 4 seconds, what was its height when it was caught?
- d) From the table and graph, determine:
 - 1) the maximum height reached by the baseball;
 - 2) the time required for the ball to reach this height.

DON'T FORGET TEXTBOOK!