Unit Review

Consolidation

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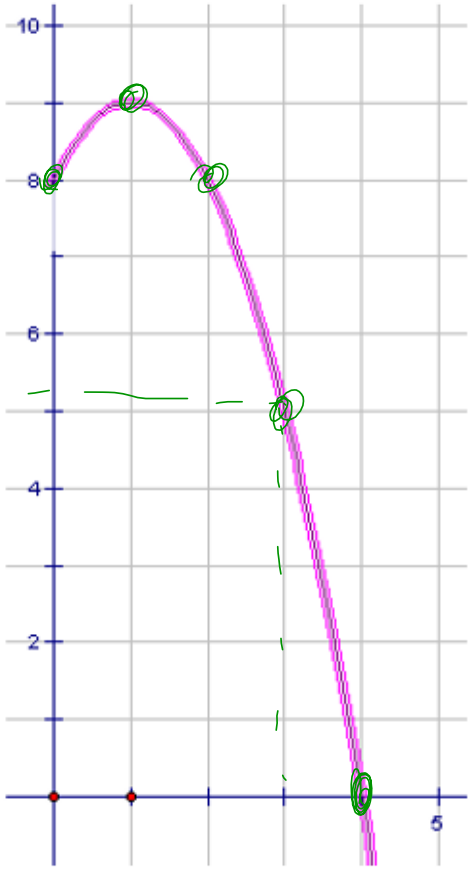
Scenario 1 – Olympic Diver



Katherine has been studying her dives in preparation of the 2012 London Olympics. She has her friend record her jump, and the following graph is what represents her best dive of the day (height and distance in metres).

Identify the key features of the graph:

Vertex: (1, 9) Zeros: x = 4

y-intercept: y = 8

Interpret the key features of the graph:

What is the highest point that the Katherine reaches?

9m

How far is Katherine from her board when she reaches her maximum height?

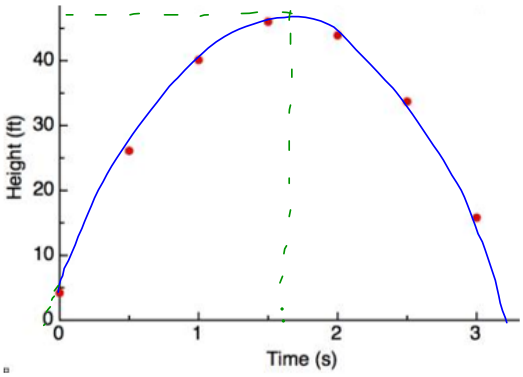
1m

After far away from the edge of the pool does Katherine land?

4m

How high will Katherine be when she is 3 m away horizontally from the diving tower? 5m

Scenario 2 – Baseball Player



The scatterplot to the left models the height (in feet) of a baseball over time (seconds) after it was hit by a player.

Fit a quadratic model to the graph by hand.

Identify the key features of the graph:

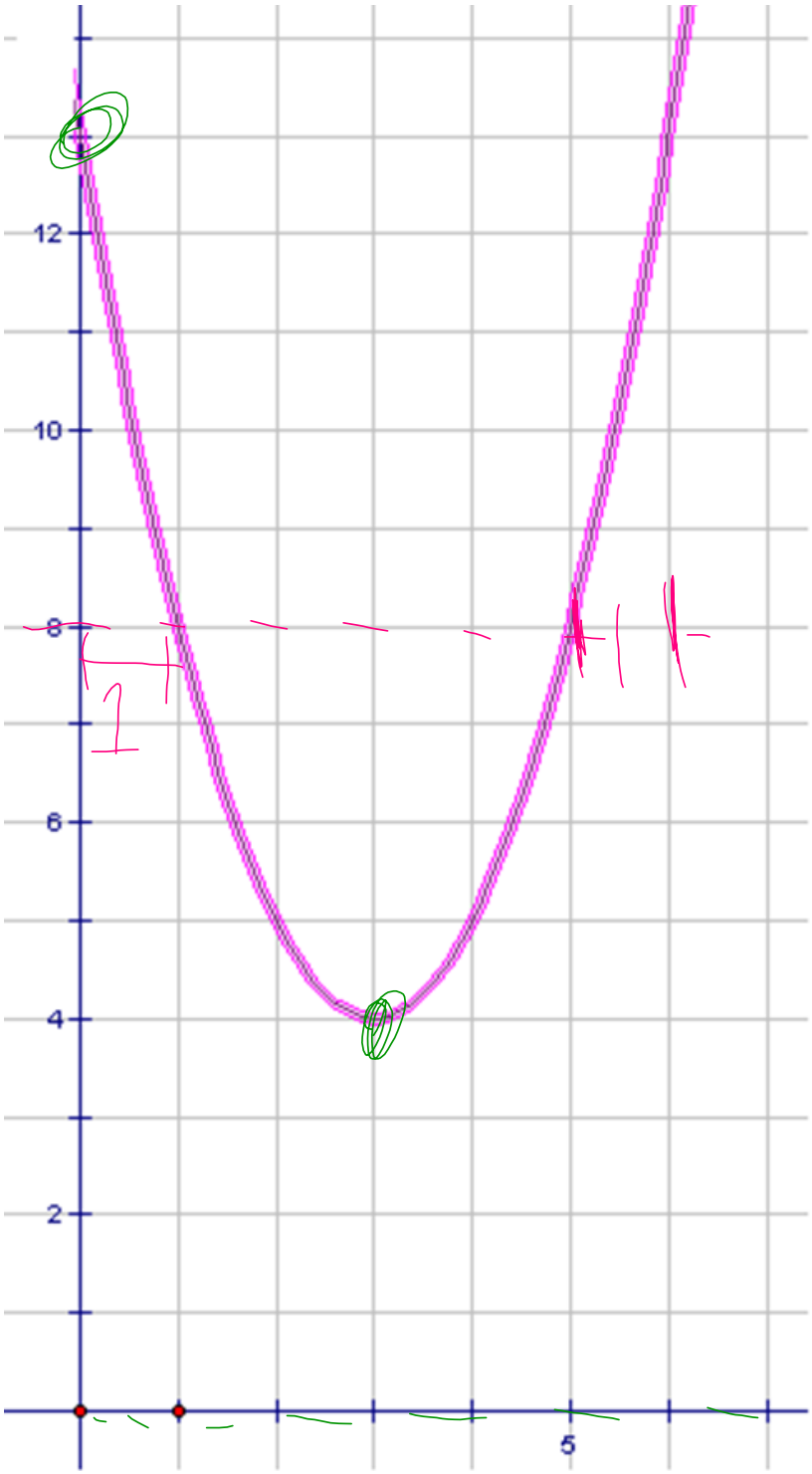
Vertex: (1.5, 47) Zeros: x=3.5 y-intercept: y=4

Interpret the key features of the graph:

What is the highest point that the ball reaches? 47ft.

What does the y-intercept stand for?

The height above the ground where the batter made contact with the ball.



Tom is building a model of the Behemoth roller coaster at Canada's Wonderland. He recorded his roller coaster's height, h, on the track after t seconds.

Identify the key features of the graph:

Vertex: (3, 4)

Zeros: none

y-intercept: y = 13

Interpret the key features of the graph:

What does the vertex represent in the context of this problem?
lowest point

What does the y-intercept represent in the context of this problem?

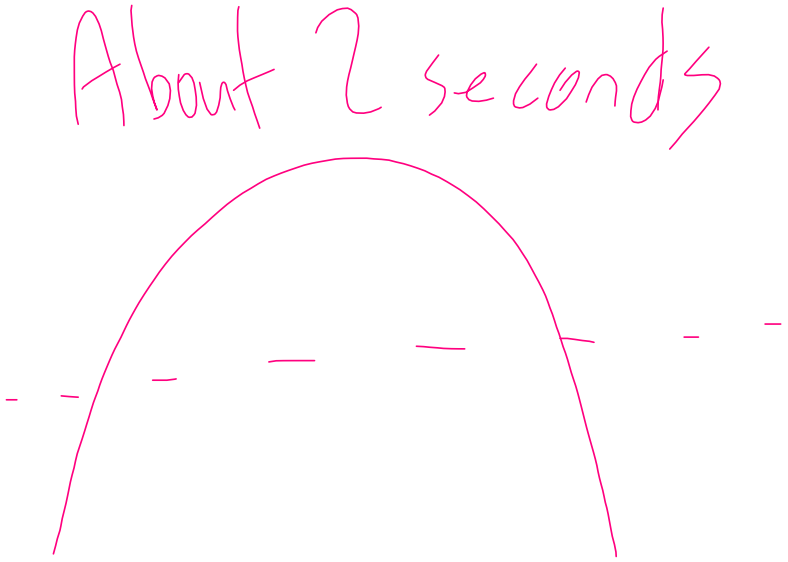
Explain why this parabola has no x-intercepts (be specific to the scenario given above).

because the roller coaster was never on the ground

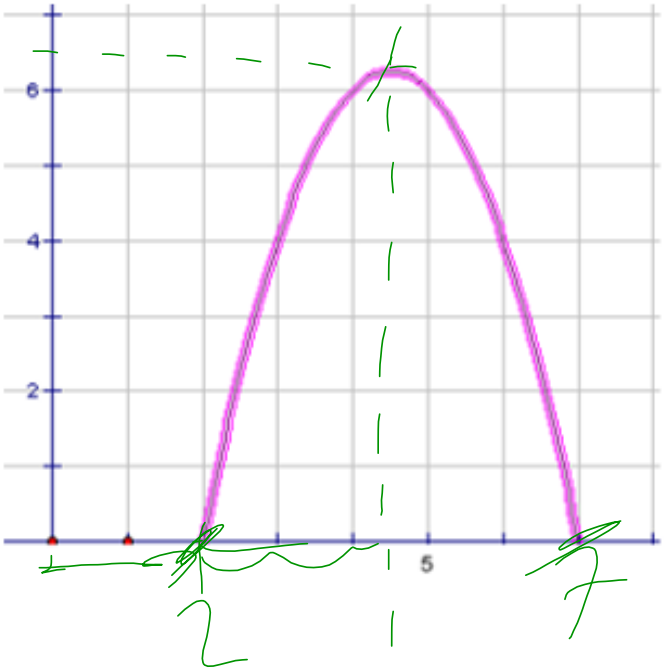
where the roller coaster starts, the height

Draw conclusions

How long will Tom's roller coaster be 8 m or higher in the air?



Scenario 4 – You Decide!



Create a scenario that could be represented by the data in the graph. Include your units (time, height, distance, amount or whatever)

Describe how the "key features" of the graph are represented in your scenario.

Understanding Properties of Quadratics.

x	y
0	10
1	9
2	8
3	5
4	0

1, -1, -3, -5 ; -2, -2, -2

Create a Table of Values

Select any one of the graphs from the first three scenarios, then complete a table of values based on the graph.

Which graph did you select? 2

Verify a Quadratic Relation

Describe how you can use your table of values to prove that the graph you selected is quadratic.

because the second differences are constant, the table represents a quadratic relation