4.3 Practice Worksheet

For problems 1-4, find an equation in standard form of the parabola passing through the given points.

1. $(-1, 2), (1,8), (-3,4)$

2. $(-1,4), (2,5), (4,9)$

3. $(-1,3), (1, -11), (8,3)$

For problems 5-7, solve the provided word problems.

4. Tommy throws a ball off the top of a building and Allie records the height of the ball at different times, shown in the table.

   a. Find a quadratic model for the data.

   b. Use the model to estimate the height of the ball at 2.5 seconds.

   c. What is the ball's maximum height?

Time	Height (ft)
0	50
1	68
2	54
3	8

5. The table gives the number of scuba dive trips sold at a tropical resort.

Month	Scuba Trips
April	36
May	52
June	84

a. Find a quadratic model for the data, using April as month 1, May as month 2,

b. Use the model to predict the number of scuba dive trips sold in August.

6. On a suspension bridge, the roadway is hung from cables hanging between support towers. The cable of one bridge is in the shape of a parabola $y = 0.1x^2 - 6x + 110$, where *y* is the height in feet of the cable above the roadway at the distance, *x* feet from a support tower.

a. What is the closest the cable comes to the roadway?

b. How far from the support tower did this occur?

7. Abigail wants to build a fence around a rectangular area for a garden. She has 150 feet of fencing and she wants to leave a 10-foot opening on one side for a gate. In order to make the area of the garden a maximum, what should the dimensions of the garden be?