Writing Equations for Parabolas

1. a. A flying fish leaps out of the water and splashes down again 16 ft further, reaching a maximum height of 4 ft on its parabolic path. Write an equation for the path.

    b. At what distances from the spot where the fish emerged from the water is it 3 ft high?

2. a. A ball rolls off a 3-ft-high table and lands on the ground a horizontal distance of 2 ft from the edge of the table. Write an equation for the ball's path.

    b. What is the horizontal distance from the edge of the table to the ball when the ball is 1 ft off the ground?

3. a. Water from the water fountain flows in a parabolic arc 4 in high and 6 inches wide. Write an equation for this parabola.

    b. You're thirsty, but to get a drink you need to calculate exactly where to put your mouth. You determine you want to put it 4 inches horizontally from the spout to avoid germs. How high up should your mouth be?

4. a. The length of the main span of the Golden Gate Bridge, between the towers, is 4200 ft. The height of the towers is 500 ft above the road way. With the road suspended from them on equally spaced vertical cables, the main cables form parabolas. Write an equation for this parabola.

    b. How long are the vertical cables that are located 1000 ft from the center of the bridge?

    c. How far horizontally from the center of the bridge are the vertical cables that are 300 ft long?

5. a. A can starts out 6 ft from a CBR. It is rolled along a tilted table and accelerates at a constant rate toward the CBR. Its distance as a function of time is a quadratic function. After 5 seconds, the can reaches the ranger. Write an equation for the (time, distance) function.

    b. How far from the ranger is the can after 3 seconds?

    c. At what time will the can be 2 ft from the ranger?