1.1 & 1.2 Real World Problems

**GO-CARTS** A go-cart track has about 380 racers per week and charges each racer $35 to race. The owner estimates that there will be 20 more racers per week for every $1 reduction in the price per racer. How can the owner of the go-cart track maximize weekly revenue?

**FOOTBALL** The path of a placekicked football can be modeled by the function $y = -0.026(x - 46)$ where $x$ is the horizontal distance (in yards) and $y$ is the corresponding height (in yards).

a. How far is the football kicked?
b. What is the football's maximum height?
CIVIL ENGINEERING. The Tacoma Narrows Bridge in Washington has two towers that each rise 307 feet above the roadway and are connected by suspension cables as shown. Each cable can be modeled by the function

\[ y = \frac{1}{7000} (x - 1400)^2 + 27 \]

where \( x \) and \( y \) are measured in feet. What is the distance \( d \) between the two towers?