

The JETS Challenge

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Challenge 27 – The Challenge of the Verrazano Bridge

Problem:

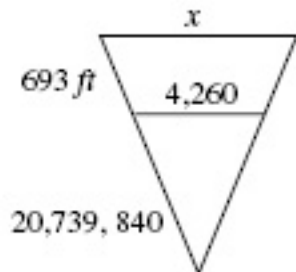
The Verrazano Bridge near New York City is the longest suspension bridge in the United States at 4,260 feet between the base of its twin towers. The towers are so tall (693 feet) that due to the curvature of the earth, the tops are measurably farther apart than the bottoms, although both are perfectly vertical.

If the diameter of the earth is taken as 7,856 miles, how much farther apart are the tower tops than the bottoms?

Solution:

$$x \text{ ft} = 7856 \text{ miles} \frac{5280 \text{ ft}}{1 \text{ mile}} = \frac{41,479,680 \text{ ft}}{2}$$

$$r = 20,739,840 \text{ ft}$$



$$\frac{4260 \text{ ft}}{20,739,840 \text{ ft}} = \frac{x}{20,740,533 \text{ ft}}$$

$$x = 4260.14234$$

the difference = $4,260.14234 - 4,260 = .142 \text{ ft}$ or 1.7 inches