The Earth Belt Task

Put a belt around Earth's equator, making it fit tightly on the Earth's surface. Then add 36 feet to the length of the belt. Make the distance from the belt to the surface of Earth equal all the way around.

A few important pieces of information: Circumference = $2 \cdot \pi \cdot r$ for any circle, and the radius (r) of the Earth is approximately 3,960 miles. Also, 1 mile is equivalent to 5,280 feet.

Imagine in your mind how far the belt may be from the Earth's surface, and answer the following Yes or No questions.

1. Could you drive a double-decker bus under the belt? _____

2. Could you walk under the belt? _____

3. Could you drive a car under the belt? _____

4. Could you do a standing broad jump over the belt? _____

5. Could you crawl under the belt? _____

6. Could you push a matchbox car under the belt? _____

7. Could an ant crawl under the belt? _____

Now for the mathematics problems — Find the distance between the belt and the surface of Earth.

Then consider <u>any circle</u> (like the Equator, a trash can lid, a hula hoop, or the great circle of a tennis ball). If you add 36 feet to the circumference of this original circle, generally find the distance between the original circle and the new circle if the gap between circles is made to be the same all the way around. In your work, use r and C for the old radius and circumference and r* and C* for the new radius and circumference. Are you surprised with the answer?