

1. Use linear approximation to estimate $\sin 43^\circ$.
2. I've got a turkey in the oven. After an hour the meat thermometer indicates that the temperature of the turkey is 93°F , and after two hours it indicates 129°F . Predict the temperature of the turkey after 3 hours.
3. The snowball that I threw at my brother's head was a perfect sphere. I measured its radius and found it to be 21 cm, with a possible error in measurement of at most 0.05 cm. What is the maximum error in using this value of the radius to compute the volume of the sphere?
4. (a) The equatorial radius of the earth is approximately 3960 miles. Suppose that a wire is wrapped tightly around the earth at the equator. Approximately how much must this wire be lengthened if it is to be strung all the way around the earth on poles 1 inch above the ground? (Use linear approximation!) What's the exact answer?
(b) The radius of a basketball is approximately 6 inches. Suppose that a wire is wrapped tightly around the basketball at its equator. How much must this wire be lengthened if it is to be strung all the way around the basketball on poles 1 inch above its surface?