

1. The volume of a snowball of radius r is $V(r) = (4/3)\pi r^3$, where r is measured in inches and V is measured in inches cubed. Explain what $V'(2) \approx 50.265$ means in language your parents could understand.
2. If you increase the radius of a snowball from 2 inches to 2.02 inches, estimate the change in volume of the snowball.
3. Compute $\frac{d}{dx} \tan(x)$
4. Compute $\frac{d}{dx} \sec(x)$
5. Compute the second derivative $\frac{d^2}{dx^2} e^x \cos(x)$

6. A 12 foot ladder rests against a wall. Let θ be the angle between the ladder and the wall and let x be the distance from the base of the ladder and the wall.

a. Compute x as a function of θ .

b. How fast does x change with respect to θ when $\theta = \pi/6$?