

- (9.) (8 points) Winter is here! Soon we will have icicles. Consider an icicle in the shape of a right circular cone. The sun is causing the icicle to lengthen. As its length, h , is increasing at the rate of 0.5 cm/hr, the radius, r , of the cone is decreasing at the rate of 0.02 cm/hr. When the icicle is 12 cm long and its radius is 1 cm, is the volume of the icicle increasing or decreasing? At what rate is the volume changing? [The volume of a right circular cone is given by $V = \frac{1}{3}\pi r^2 h$. Note that in this problem, both h and r are functions of time.]