

1. (a) Each edge  $x$  of a square is increasing at the rate of 2 in./sec. At what rate is the area  $A$  of the square increasing when each edge is 10 in.? (Give units.)  
(b) The area  $A$  of a square is increasing at the rate of 8 in.<sup>2</sup> /sec. At what rate is the edge length  $x$  increasing when each edge is 4 in.? (Give units.)
2. (a) The number  $B$  of bacteria living on the leftover eggplant in my fridge after  $t$  days is given by the function  $B(t) = 1000e^{0.1t}$ . How fast are they growing after 10 days?  
(b) The tastiness  $T$  of the eggplant is a function of the number of bacteria living on it:  $T = \frac{1}{B}$ . How fast is the tastiness decreasing after 10 days?
3. Uncle Ant is shining a laser beam on a wall. If the wall is 10 meters away, and the angle that the beam makes with the ground is increasing at a rate of 0.1 radians/second, how fast is the height  $y$  of the spot on the wall increasing?