1) The edges of a cube are increasing at a rate of 5 cm/sec. How fast is the surface area of the cube changing when the surface area is 600 cm²?

2) A tank has the shape of an inverted right circular cone with a height of 20 ft and a radius of 8 ft. If water is pumped into the tank at a rate of 30 ft³/min, find the rate at which the water level is rising when it is 5 ft deep.

3) At 8 am, Pam is 31 miles due west of Jim. If Pam walks due east at a rate of 4 mph and Jim walks due south at a rate of 5 mph, find the rate at which the distance between them is changing at noon.

4) If the surface area of a cube is increasing at a rate of 40 cm²/sec, how fast is its volume changing when its surface area is 150 cm²?

5) If the radius of a right circular cylinder is increasing at a rate of 2 cm/min and its height is increasing at a rate of 0.1 cm/min, how fast is its volume changing when its radius is 80 cm and its height is 4 cm?

6) At noon, ship A is 400 km due west of ship B. If ship A is sailing south at a rate of 45 km/hr and ship B is sailing north at a rate of 30 km/hr, how fast is the distance between the ships changing at 4 pm?

7) A rocket is traveling straight up at the rate of 1200 mph, and an observer is located 100 mi from the launchpad for the rocket. How fast is the angle of elevation of the rocket changing when it is at a height of 300 mi?

8) A man 6 ft tall is walking away from a streetlight 24 ft above the ground at a rate of 3 ft/sec. How fast is the length of his shadow increasing when he is 87 ft from the base of the light?