

TUTORS: THIS IS A TAKE HOME QUIZ

A 10 foot ladder rests against a wall. The top of the ladder is sliding down the wall at a rate of 2 feet per minute. How quickly is the angle between the base of the ladder and the ground changing when the base of the ladder is 6 feet from the wall ?

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At exactly noon, a SmartCar is 4 miles west of an intersection, driving east at 60 mph, and a Prius is 3 miles north of the intersection, driving north at 70 mph. At that moment, at what rate is the distance between the two cars changing ? Are the two cars getting closer together or farther apart at that time ? (NOTE: The distance is the straight line distance, NOT the distance along the roads.)

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A tank filled with water has the shape of an inverted cone 6 feet across and 8 feet tall. Water is leaking from the cone at 25 cubic feet per minute. How quickly is the water line (the top of the water) falling ?

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Boyle's Law states that, for a fixed amount of gas, the product of the temperature and the pressure of the gas is constant. The volume of a certain amount of gas is currently 4 liters, and the pressure is 90 kPa. If the gas is being compressed by 0.5 liters per minute, how quickly is the pressure changing when the volume is 3 liters ?

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