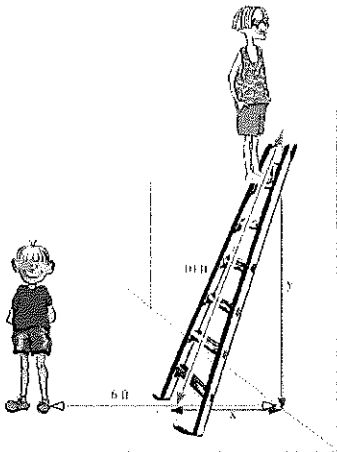


LESSON #10

CW below problems- HW 2002B#6

- 1 A hot-air balloon rising straight up from a level field is tracked by a range finder 500 feet from the lift-off point. At the moment the range finder's elevation angle is $\frac{\pi}{4}$, the angle is increasing at the rate of 0.14 radians per minute. How fast is the balloon rising at that moment?
- 2 A police cruiser, approaching a right-angled intersection from the north, is chasing a speeding car that has turned the corner and is now moving straight east. When the cruiser is 0.6 miles north of the intersection and the car is 0.8 miles to the east, the police determine with radar that the distance between them and the car is increasing at 20 mpg. If the cruiser is moving at 60 mph at the instant of measurement, what is the speed of the car?
- 3 Joey is perched precariously at the top of a 10 ft ladder leaning against the back wall of an apartment building, when it starts to slide down the wall at a rate of 4 ft per minute. Joey's accomplice, Lou, is standing on the ground 6 ft away from the wall. How fast is the base of the ladder moving when it hits Lou?



4 A pebble is dropped into a calm pond, causing ripples in the form of concentric circles. The radius r of the outer circle is increasing at a rate of 1 ft per second. When the radius is 4 ft, at what rate is the total area A of the disturbed water changing?

5. A cone-shaped icicle is dripping from the roof. The radius of the icicle is decreasing at a rate of 0.2 cm/hour, while the length is increasing at a rate of 0.8 cm/hour. If the icicle is currently 4 cm in radius and 20 cm long, is the volume of the icicle increasing or decreasing, and at what rate? $V = \frac{1}{3} \pi r^2 h$

Lesson #11 (WED)

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