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Worksheet 12

1. (Taken from §3.9, Example 2) A 10 ft ladder rest against a vertical wall. If the bottom of the ladder slides away from the wall at a rate of 1.5 ft/s, how fast is the top of the ladder sliding down the wall when the bottom of the ladder is 6 ft from the wall?

(a) Picture

(c) Relating equation for the quantities

(d) Relating equation for the rates

(b) Known & Unknown Rates

(e) Solution

- Rates you know:

- Rates you want:

2. A snowball is melting at a rate of $2.5 \text{ cm}^3/\text{min}$. Find the rate at which the diameter is decreasing when the diameter is 10 cm.

(a) Picture

(c) Relating equation for the quantities

(d) Relating equation for the rates

(b) Known & Unknown Rates

(e) Solution

- Rates you know:

- Rates you want:

3. (Taken from §3.9, #16) A spotlight located on the ground shines on a wall 12 m away. If a person 2 m tall walks from the spotlight toward the building a speed of 1.6 m/s, how fast is the length of their shadow on the building decreasing when they are 4 m from the building?
4. (Taken from §3.9, Example 5) A cat runs along a straight path at a speed of 4 ft/s. A searchlight is located on the ground 20 ft from the path and is kept focused on the cat. At what rate is the searchlight rotating when the cat is 15 ft from the point on the path closest to the searchlight?