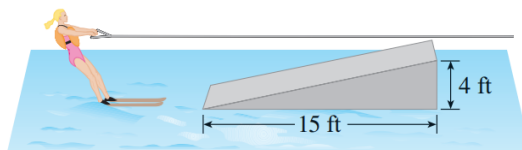
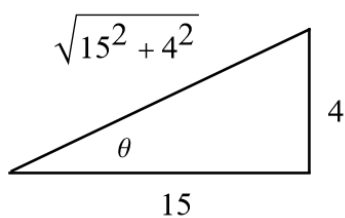


Exercise 100

A waterskier skis over the ramp shown in the figure at a speed of 30 ft/s. How fast is she rising as she leaves the ramp?

**Solution**

Determine the hypotenuse of the triangle by using the Pythagorean theorem.



The y -component of the waterskier's velocity is

$$v_y = v \sin \theta = \left(30 \frac{\text{ft}}{\text{s}}\right) \left(\frac{4}{\sqrt{15^2 + 4^2}}\right) = \frac{120}{\sqrt{241}} \approx 7.72988 \frac{\text{ft}}{\text{s}}.$$

This is how fast she's rising as she leaves the ramp.