

## Problem 23

For the system in Problem 17, suppose that  $\Delta = 3$  and  $T_d = 0.3$  s. Referring to Problem 21, determine the value of the damping coefficient  $\gamma$ .

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### Solution

According to Problem 21, the logarithmic decrement is

$$\Delta = \frac{\pi\gamma}{m\mu} = \frac{\gamma T_d}{2m}.$$

The mass in Problem 17 is  $m = W/g = (8 \text{ lb})/(32.2 \text{ ft/s}^2)$ . Solve for  $\gamma$  and plug in the numbers.

$$\gamma = \frac{2m\Delta}{T_d} \approx 4.97 \frac{\text{lb} \cdot \text{s}}{\text{ft}}$$