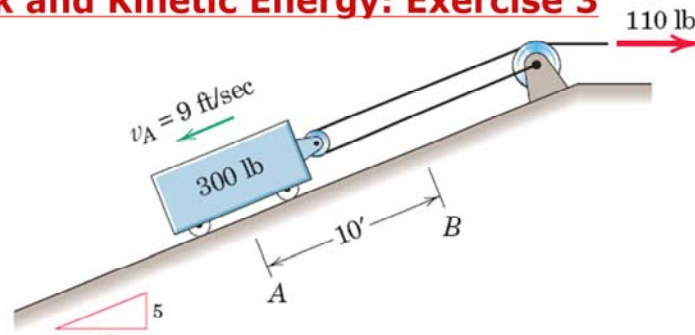


### Work and Kinetic Energy: Exercise 3



The 300-lb carriage has an initial **velocity** of **9 ft/s** down the incline at **A**, when a constant **force** of **110 lb** is applied to the cable.

Determine the **velocity** of the carriage when it reaches **B**.

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Let  $s$  = distance down incline before reversal of direction.

$$U_{1-2} = 110(2)(10 + s - s) - 300(10 + s - s)\frac{5}{13} = 1046 \text{ ft}\cdot\text{lb}$$

$$\Delta T = \frac{1}{2} \frac{300}{32.2} [v^2 - (\pm 9)^2] = 4.66v^2 - 377 \text{ ft}\cdot\text{lb}$$

$$U_{1-2} = \Delta T: 1046 = 4.66v^2 - 377$$

$$v = \underline{17.48 \text{ ft/sec}}$$

The initial kinetic energy is positive regardless of the velocity direction.