Answer on Question 73410, Physics, Other

Question:

A boat takes off from the dock at 2.5 m/s and speeds up at 4.2 m/s^2 for 6.0 s. How far has the boat traveled? Round your answer to the nearest whole number.

Solution:

We can find the distance traveled by the boat from the kinematic equation:

$$d = v_0 t + \frac{1}{2} a t^2,$$

here, d is the distance traveled by the boat, v_0 is the initial velocity of the boat, a is the acceleration of the boat and t is the time.

Then, we get:

$$d = v_0 t + \frac{1}{2} a t^2 = 2.5 \, \frac{m}{s} \cdot 6.0 \, s + \frac{1}{2} \cdot 4.2 \, \frac{m}{s^2} \cdot (6.0 \, s)^2 = 91 \, m.$$

Answer:

$d = 91 \, m.$