

Homework (LE 1)

Problem 1.1(new)

The greatest ocean depth yet discovered is in the Marianas Trench in the western Pacific Ocean. A 29 lb steel ball released at the surface requires 64 minutes to reach the bottom. The ball's experiences a drag force equal to $D = 3.02 v$ where $c = 3.02$ lb-s/ft and v is the speed of the ball. What is the depth of the Marianas Trench in miles?

Problem 1.2 (new)

A boat is moving to the right with a constant deceleration of 0.3 m/s^2 when a boy standing on the deck D throws a ball with an initial velocity relative to the deck which is vertical. The ball rises to a maximum height of 8 m above the release point and the boy must step forward a distance d to catch it at the same height as the release point.

Determine (a) the distance d , (b) the relative velocity of the ball with respect to the deck when the ball is caught.

Problem 1.3

A bag of laundry is tossed with an initial velocity $(\mathbf{v}_C)_0 = 1.8 \text{ m/s}$ 50° falls onto conveyor belt B . Determine the required velocity \mathbf{v}_B of the belt if the relative velocity with which the bag hits the belt is to be (a) vertical, (b) as small as possible.

