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BOOK WORK CHAPTER 3 Projectiles

Pg. 102

1) A pelican flying along a horizontal path drops a fish from a height of 5.4 m while traveling 5 m/s. How far does the fish travel horizontally before it hits the water below?

2) Give both the horizontal and vertical components of the velocity of the fish from item 1 before the fish enters the water. (Find V_{fx} and V_{fy} if $D_y = -5.4\text{m}$, $V_{ix} = 5\text{ m/s}$, $V_{iy} = 0$)

3) Find the instantaneous velocity of the stunt dummy in Sample Problem 3D as it hits the water. (Find V_{fx} and V_{fy} if $D_y = -10\text{ m}$, $V_{ix} = 22.5\text{ m/s}$, $V_{iy} = 0$)

4) A cat chases a mouse across a 1.0 m high table. The mouse steps out of the way and the cat slides off the table at a speed of 5 m/s. Where does the cat strike the floor?

Bookwork Chapter 3 pg. 105 Section Review (do on fresh paper so you have room!)

1) Which of the following are examples of projectile motion?

a) airplane taking off, b) tennis ball lobbed over a net. c) plastic disk sailing over the lawn
d) a hawk diving to catch a mouse e) a parachutist drifting to Earth f) a frog jumping from the land into the water.

2) Which of the following exhibit parabolic motion?

a) a flat rock skipping over the surface of the lake b) a three point shot in basketball c) the space shuttle while orbiting the Earth d) a ball bouncing across the room e) a cliff diver f) a life preserver dropped from a stationary helicopter g) a person skipping

3) An Alaskan rescue plane drops a package of emergency rations to a stranded party of explorers. The plane is traveling horizontally at 100 m/s at a height of 50 m above the ground. What horizontal distance does the package travel before striking the ground?

4) Find the velocity (vector magnitude and direction) of the package in item 3 just before it hits the ground.

5) During a thunderstorm, a tornado lifts a car to a height of 125 m above the ground. Increasing in strength, the tornado flings the car horizontally with an initial speed of 90 m/s. How long does the car take to reach the ground? How far horizontally does the car travel before hitting the ground?

*** 6) Streams of water in a fountain shoot from one level to the next. A particle of water in a stream takes 0.5 seconds to travel between the first and the second level. The receptacle on the second level is a horizontal distance of 1.5 m away from the spout on the first level. If the water is projected at a 33° angle, what is the initial speed of the particle?

*** 7) If a water particle in a stream of water in a fountain takes 0.35 seconds to travel from spout to receptacle when shot at an angle of 67° and an initial speed of 5 m/s, what is the vertical distance between the levels of the fountain?