Ch 3 - Page 101 - Practice Problems E – Projectiles Launched at an Angle

1. In a scene in an action movie, a stuntman jumps from the top of one building to the top of another building 4.0 m away. After a running start, he leaps at a velocity of 5.0 m/s at an angle of 15° with respect to the flat roof. Will he make it to the other roof, which is 2.5 m shorter than the building he jumps from?
2. A golfer hits a golf ball at an angle of 25° to the ground. If the golf ball covers a horizontal distance of 301.5 m, what is the ball’s maximum height? (Hint: At the top of its flight, the ball’s vertical velocity component will be zero.)
3. A baseball is thrown at an angle of 25° relative to the ground at a speed of 23.0 m/s. If the ball was caught 42.0 m from the thrower, how long was it in the air? How high did the ball travel before being caught?
4. Salmon often jump waterfalls to reach their breeding grounds. One salmon starts 2.0 m from a waterfall that is 0.55 m tall and jumps at an angle of 32.0°. What must be the salmon’s minimum speed to reach the waterfall?
5. 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 and strikes the floor 2.2 m from the edge of the table. When the cat slid off the table, what was its speed?
6. A pelican flying along a horizontal path drops a fish from a height of 5.4 m. The fish travels 8.0 m horizontally before it hits the water below. What is the pelican speed?
7. If the pelican in item 3 was traveling at the same speed buy only 2.7 m above the water, how far would the fish travel horizontally before hitting the floor below?