Answer on Question#50527 - Physics - Mechanics - Kinematics - Dynamics

A ball is hit with $v_0 = 20$m/s velocity creating an angle of $\varphi = 30°$. It is dropped after some time. 6 s after dropping, one fielder took the ball and threw it. At that moment a batsman achieves 1 run and started running for the 2nd run. After 3 s from throwing time, the ball hits the stump. To complete 1 run a batsman need minimum 6 s. Will the batsman got run out?

<u>Solution:</u>

After the ball was hit, it (the ball) was flying for some time t which defines as follows

$$t = \frac{2v_0 \cdot \sin \varphi}{g} = \frac{2 \cdot 20\frac{m}{s} \cdot 0.5}{10\frac{m}{s^2}} = 2s$$

The total time which passed from when the ball was hit and till it hit the stump is

$$t_{total} = 2s + 6s + 3s = 11s$$

The batsman needs 12s to achieve 2nd run. Since it's larger than 11s, he won't got run out.

<u>Answer:</u> won't got run out.