

Application: Service in tennis

A tennis-player is serving. He hits the ball 2,8m above the ground and should smash it over a net (height of the net: approx. 0,9 m). The distance between net and baseline is 11,9 m.

1. What is the range of serve speed and angle to place the ball within the service court (given by the spot on the right)?
2. Determine the angle with the maximum serve speed!
3. Given Roger Federer hits the ball 3,1m above the ground. What is the maximum serve speed?
4. What is the maximum serve speed of Diego Schwartzman, who hits the ball around 2,8m above the ground?
5. Given a serve speed of 40 m/s. What is the minimum height a player has to hit the ball to get the ball over the net if he hits the ball horizontal?