



On the floor of a big room there are two balls: a basketball B and a football F . The balls have different radius:

$$R_B = 0.15m \quad ; \quad R_F = 0.12m$$

We consider the floor of the room as the plane $z = 0$ so that the position vectors of the balls are:

$$\vec{r}_{B0} = (1m, 1m, R_B) \quad ; \quad \vec{r}_{F0} = (5m, 4.75m, R_F)$$

In the picture you can see this initial state from above and from aside. At time t_0 two boys simultaneously kick the balls, giving them initial velocities:

$$\vec{v}_{B0} = (3m/s, 3m/s, 1m/s) \quad ; \quad \vec{v}_{F0} = (-3m/s, -3m/s, 1m/s)$$

At time t_1 the two balls touch each other, in air. Calculate t_1 .

[Solution: $t_1 = 0.622s$]