Door Opening Near Bookshelf

Your apartment is very cramped. On the wall of one room is a door that opens into the room. The hinge of the door is 24 inches from the nearest corner, and the door is 34 inches wide. You have a bookshelf that is 30 inches long, 12 inches deep, and 60 inches high. You would like to locate your bookshelf along the adjacent wall (the one closest to the hinge), and as close to the corner as possible. The door is able to open all the way until it hits the adjacent wall. How close can you put the bookshelf to the corner so the door still misses the bookshelf by 1 inch? 90% of points will be awarded for correct setup.

\[ 12^2 + x^2 = 35^2 \]

\[ x = 32.9 \text{ ft} \]