36.37. **Solve:** We have

$$p = \frac{mu}{\sqrt{1 - u^2/c^2}} = mc \Rightarrow \sqrt{1 - u^2/c^2} = \frac{u}{c} \Rightarrow 1 = \frac{2u^2}{c^2} \Rightarrow u = \frac{c}{\sqrt{2}} = 0.71c$$

Assess: The particle's momentum being equal to *mc* does not mean that the particle is moving with the speed of light. We must use the relativistic formula for the momentum as the particle speeds become high.