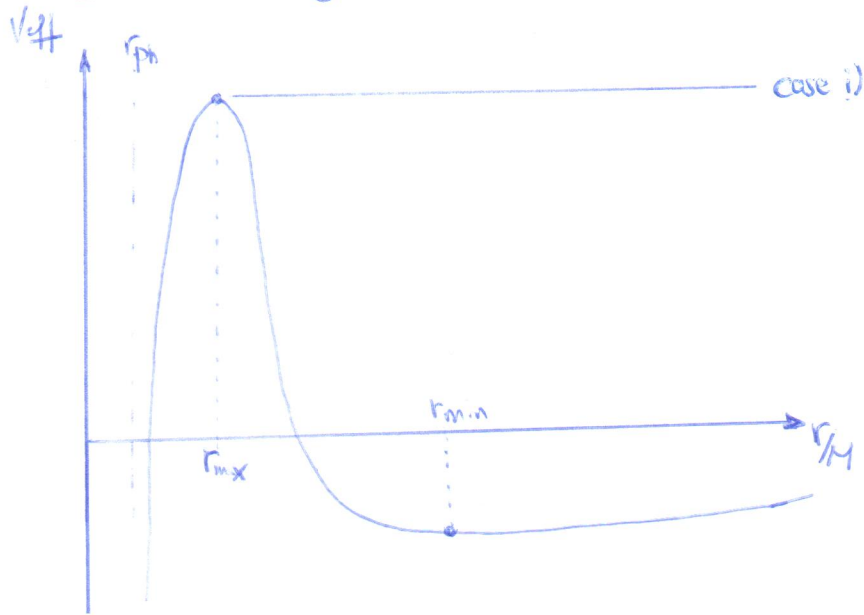
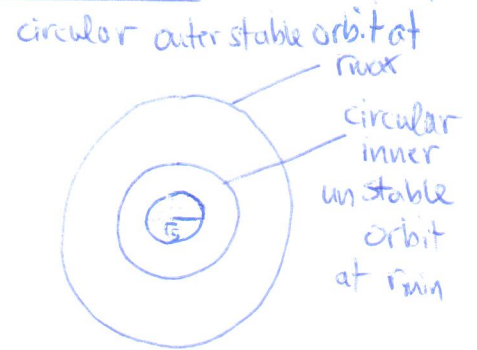


## b) Qualitative behaviour of particle orbit

i) Particle's energy  $E = V_{\text{eff}}(r_{\text{max}})$

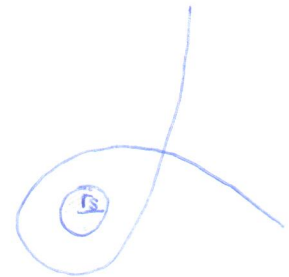
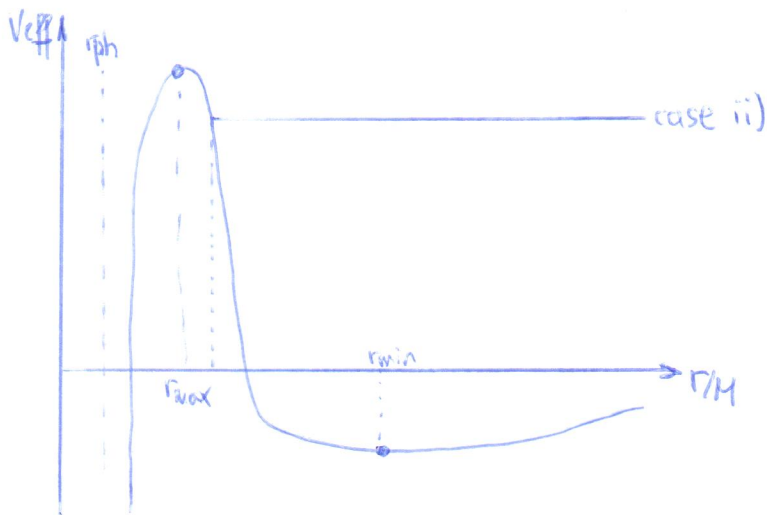


Corresponding orbit visualization



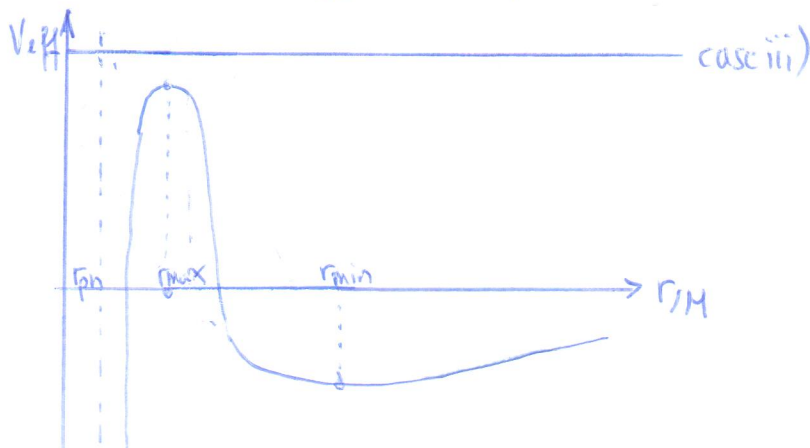
Particle will follow a circular stable orbit around BH

ii) Particle's energy  $E < V_{\text{eff}}(r_{\text{max}})$



Particle comes from infinity, passes around BH and goes to infinity again

iii) Particle's energy  $E > V_{\text{eff}}(r_{\text{max}})$



Particle comes from infinity and spirals into the BH.

