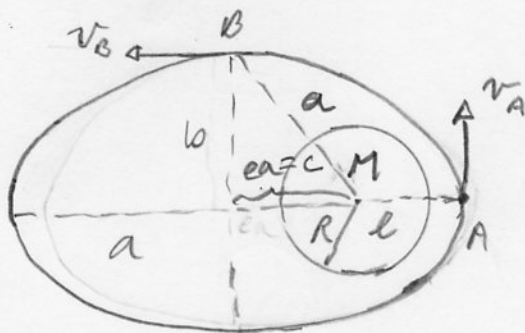


12.12

$$e = \frac{c}{a} \Leftrightarrow c = ea$$



$$l = a - ea$$

$$ea = \sqrt{a^2 - b^2}$$

$$l = a - \sqrt{a^2 - b^2}$$

Rörelsemängdsmomentet konstant: $H_B = H_A$

$$mbv_B = m \frac{(a - \sqrt{a^2 - b^2})}{l} v_A$$

$$v_A = \frac{b}{a - \sqrt{a^2 - b^2}} v_B \quad (1)$$

Mekaniska energin konstant: $T_B + V_B = T_A + V_A$

$$\frac{1}{2} m v_B^2 - G \frac{Mm}{a} = \frac{1}{2} m v_A^2 - G \frac{Mm}{a - \sqrt{a^2 - b^2}}$$

Ins av (1) $GM = gR^2$ ger

$$v_B^2 - \frac{2gR^2}{a} = \frac{b^2}{(a - \sqrt{a^2 - b^2})^2} v_B^2 - \frac{2gR^2}{a - \sqrt{a^2 - b^2}}$$

$$\frac{[a(a - \sqrt{a^2 - b^2})^2 - ab^2]}{2a(a^2 - b^2 - a\sqrt{a^2 - b^2})} v_B^2 = \frac{2gR^2[(a - \sqrt{a^2 - b^2})^2 - a(a - \sqrt{a^2 - b^2})]}{a^2 - b^2 - a\sqrt{a^2 - b^2}}$$

$$v_B^2 = \frac{gR^2}{a}$$

$$\boxed{v_B = R \sqrt{g/a}}$$

GK.