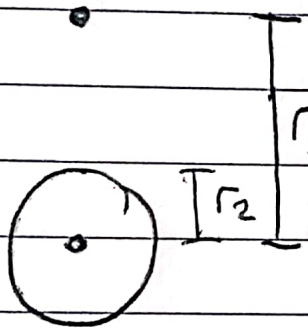
20-P-KM-BK-09



$$g = \frac{-GM}{r^2}$$

$$v dv = a ds = g dr = \frac{-GM}{r^2} dr$$

$$\int_{v_1}^{v_2} v dv = \int_{r_1}^{r_2} \frac{-GM}{r^2} dr$$

$$\frac{1}{2}v_2^2 - \frac{1}{2}v_1^2 = \frac{GM}{r_2} - \frac{GM}{r_1}$$

$v_1 = 0$

$$v_2 = \sqrt{2 \cdot GM \left(\frac{1}{r_2} - \frac{1}{r_1}\right)}$$