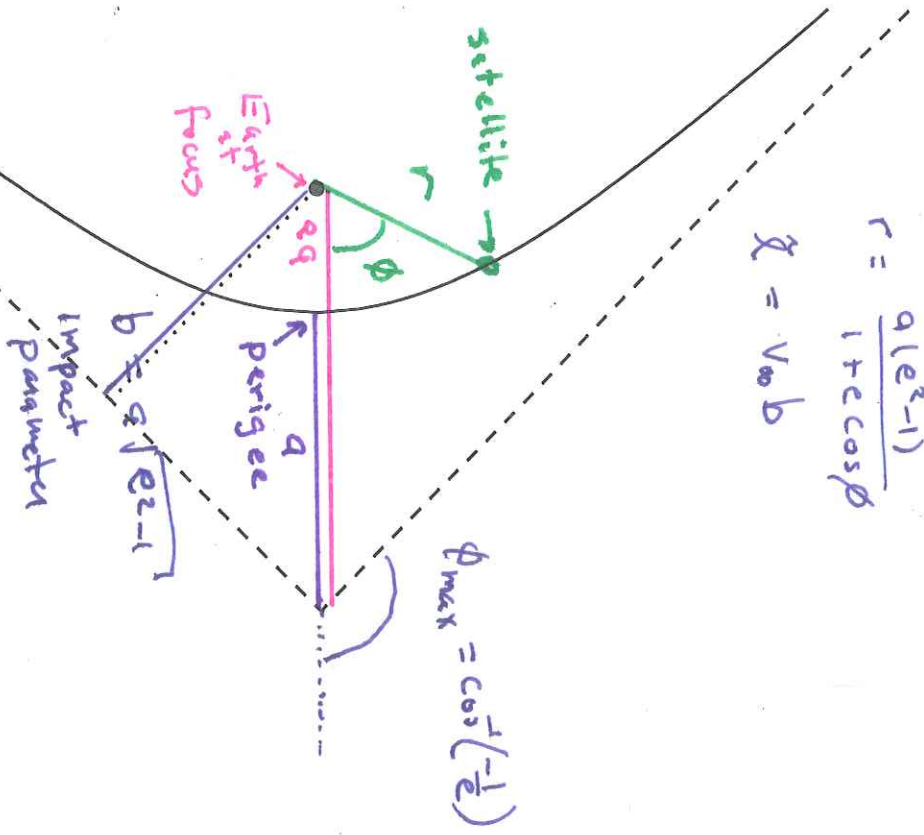


$$\frac{2E}{\mu} = \frac{d/\mu}{a} = V_{\infty}^2$$

$$r = \frac{a(e^2 - 1)}{1 + e \cos \phi}$$

$$\chi = V_{\infty} b$$



Small deflection
by $e \gg 1$ or
 $b \gg a$ i.e.
"large" T_{∞}

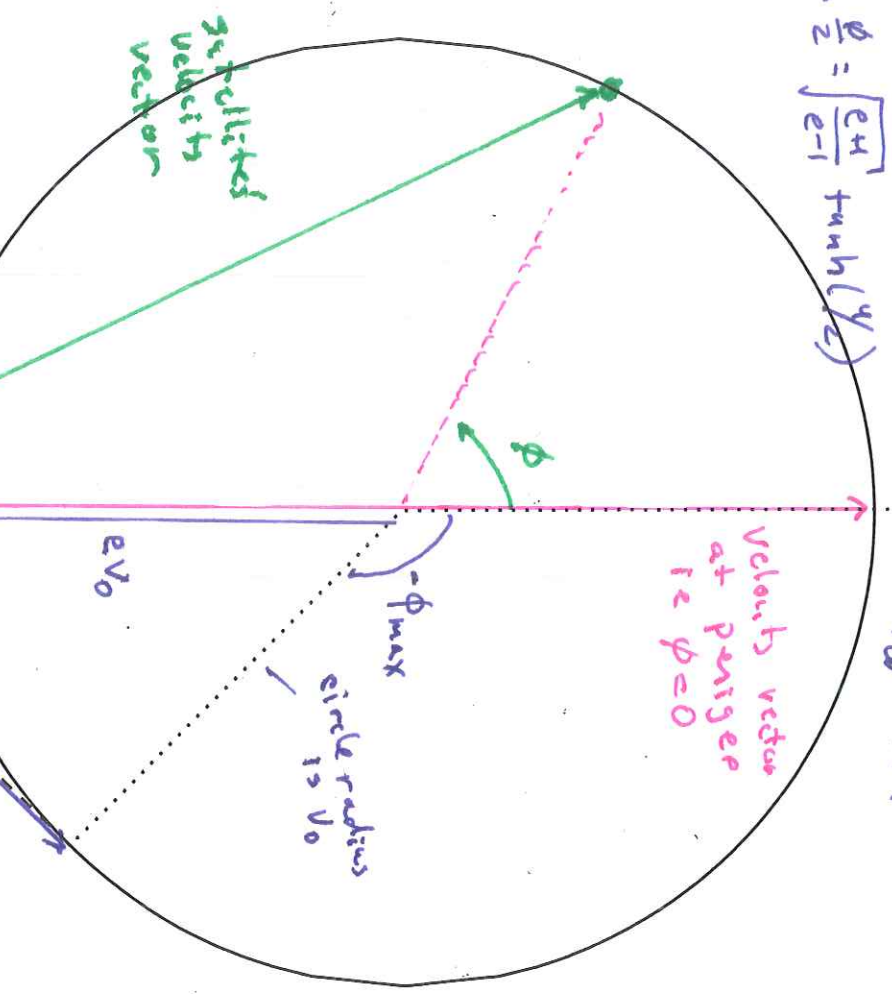
$$w = e \sinh u - u$$

$$u = \sqrt{\frac{d/\mu}{a^3}}$$

$$\tan \frac{\phi}{2} = \sqrt{\frac{e+1}{e-1}} \tanh\left(\frac{u}{2}\right)$$

$$V_0 = \frac{d/\mu}{r}$$

$$V_{\infty} = V_0 \sqrt{e^2 - 1}$$



$$\tan \frac{\theta}{2} = \frac{d/\mu}{V_{\infty}^2 b}$$

$$= \frac{d/b}{\mu V_0^2}$$

$$= \frac{5 \mu v P E}{2 \times KE}$$

θ is deflection -
angle between
 V_{∞} @ $t_2 \rightarrow \infty$ and
 V_{∞} @ $t_2 \rightarrow 0$

Note: For gravity $\frac{d}{\mu} = GM$; diagrams are for $e = \sqrt{2}$