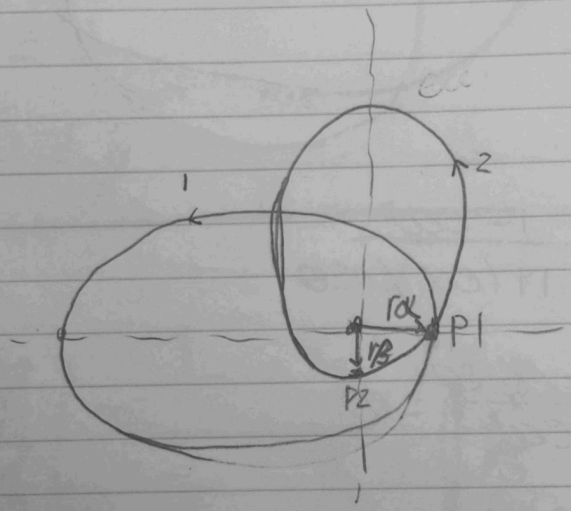
HW3

6.31

$ecc1 = ecc2$



$r_2(0°) = r_\beta$
$r_2(90°) = r_\alpha$
$r_1(0°) = r_\alpha$

$$r = \frac{h^2}{\mu}\left(\frac{1}{1+ecc\cos\theta}\right)$$

$$r_\beta = r_2(0°) = \frac{h_2^2}{\mu}\left(\frac{1}{1+ecc}\right), r_\alpha = r_2(90°) = \frac{h_2^2}{\mu}, r_\alpha = r_1(0°) = \frac{h_1^2}{\mu}\left(\frac{1}{1+ecc}\right)$$

$$\frac{h_2^2}{\mu} = \frac{h_1^2}{\mu}\left(\frac{1}{1+ecc}\right), \boxed{h_2 = \sqrt{h_1^2 \frac{1}{1+ecc}} = h_1 \frac{1}{\sqrt{1+ecc}}}$$