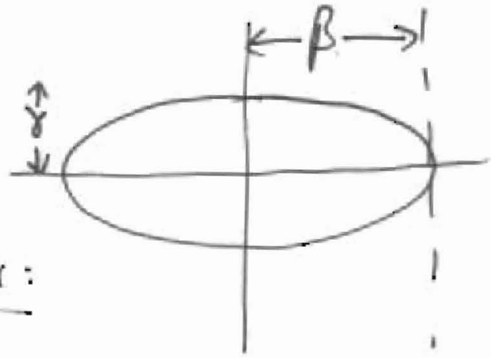
190(14): Table of Comparison of Newton and GR.

Quantity	GR	Newton
dA/dt (Kepler's Second Law)	$\frac{1}{2}c^2\frac{L}{E}m(r)$	$\frac{L}{2m}$ = constant
Orbital Linear Velocity $v = dr/dt$	$cbm(r)f(r)$, $f(r)=\left(\frac{1}{b^2}-m(r)\left(\frac{1}{a^2}+\frac{1}{r^2}\right)\right)^{1/2}$	$\left(\frac{2}{m}(E-V)-\frac{L^2}{m^2r^2}\right)^{1/2}$
Orbit $(dr/d\theta)$	$\frac{dr}{d\theta}=r^2f(r)$	$\frac{\alpha\epsilon\sin\theta}{(1+\epsilon\cos\theta)^2}=\frac{dr}{d\theta}$

Notes

1) $\epsilon=\left(1-\left(\frac{\beta}{\gamma}\right)^2\right)^{1/2}$, $\alpha=\frac{\beta^3}{\gamma^2}$



2) The function $m(r)$ must be the same for:

$$\frac{dr}{d\theta}=r^2f(r) \quad -(1)$$

$$\frac{dr}{dt}=cbm(r)f(r) \quad -(2)$$

$$\frac{dA}{dt}=\frac{1}{r^2}\frac{d\theta}{dt}=\frac{1}{r^2}\frac{d\theta}{dr}\frac{dr}{dt}=\frac{1}{2}cbm(r) \quad -(3)$$

3) For a precessing ellipse:

$$r^2f(r)=x\alpha\epsilon\sin(x\theta)/(1+\epsilon\cos(x\theta))^2 \quad -(4)$$