Project 02 necessary formulas

$$S = \frac{1}{2} at^2$$

 $\begin{aligned} & \Pi_{1} \cdot \alpha_{1} = -M_{3} \cdot \alpha_{1} - M_{2} \cdot \alpha_{2} + J_{2} \cdot M_{2} \cdot g - J_{1} \cdot (M_{2} \cdot \alpha_{2} + J_{2} - M_{2} \cdot g) \\ & \alpha_{1} \cdot (M_{1} + M_{3}) = -M_{2} \cdot \alpha_{2} + J_{2} \cdot M_{2} \cdot g - J_{1} \cdot M_{1} \cdot g + J_{1} \cdot M_{2} \cdot \alpha_{2} + J_{1} \cdot J_{2} \cdot M_{2} \cdot g \\ & \alpha_{1} \cdot (M_{1} + M_{3}) = -M_{2} \cdot \alpha_{2} + J_{2} \cdot M_{2} \cdot g - J_{1} \cdot M_{1} \cdot g + J_{1} \cdot M_{2} \cdot \alpha_{2} + J_{1} \cdot J_{2} \cdot M_{2} \cdot g \end{aligned}$

az = az as proved in the book

$$\begin{split} & M_{2} \cdot \alpha_{2} + J_{2} \cdot M_{2} \cdot g - M_{3} \cdot g + 2 \cdot J_{3} \cdot F = M_{3} ((-M_{2} \cdot \alpha_{2} + J_{2} \cdot \alpha_{2} + J_{2} \cdot M_{2} \cdot g - J_{3} \cdot \alpha_{2} + J_{4} \cdot M_{2} \cdot g - M_{1} \cdot \alpha_{2} + J_{4} \cdot M_{2} \cdot a_{2} + J_{4} \cdot M_{2} \cdot g - M_{1} \cdot \alpha_{2} - M_{3} \cdot \alpha_{2}) / (M_{1} + M_{3}) \end{split}$$

M3. (-M2.02+ 12.M2.3-11.M1.3+ 11.M2.02+ 11. 12.M2.3-M2.3-M2.02)=

= (M2+M3)(M2'a2 + J2.M2g - M3.g + 2.J3.F)

02. M3. (- M2 + JI. M2 - M1 - M3) + M3. (J2. M2.3 - JI. M1. 3 + J2. J2 M23) =

= 02. M2 (M1+M3) + (M1+M3) (J2-M2-3-M3-3+2-J3-F)

02 (M2·(M1+M3)- M3 (-M2+J1-M2-M1-M3)) = (-M1+M3)·(J2·M2-3-M3-3+ 2.J3·F) + M3 (J2·M2-3-J1·M1-3+J1·J2·M2-3)

02 = (-(M1+M3)(J2·M2·g-M3·g+2·J2·F)+M3(J2·M2·g-J1·M1·g+J1·J2·M2·g) M2(M1+M3)-M3(-M2+J1·M2-M1-M3))