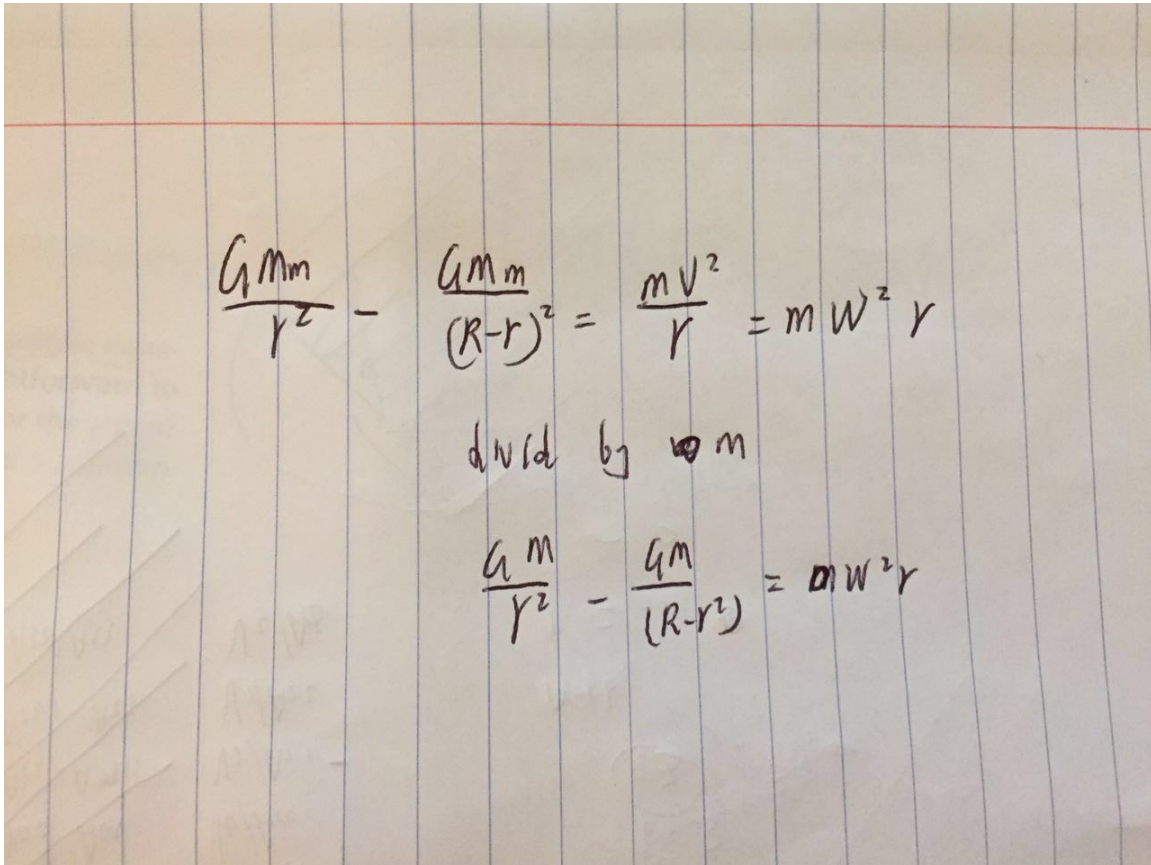


For this question, first prove the equation is right for Lagrange point.



The image shows a handwritten derivation on lined paper. The first equation is  $\frac{G M m}{r^2} - \frac{G M m}{(R-r)^2} = \frac{m v^2}{r} = m \omega^2 r$ . Below this, it says "divid by ~~m~~ m". The second equation is  $\frac{G M}{r^2} - \frac{G M}{(R-r)^2} = \omega^2 r$ .

$$\frac{G M m}{r^2} - \frac{G M m}{(R-r)^2} = \frac{m v^2}{r} = m \omega^2 r$$

divid by ~~m~~ m

$$\frac{G M}{r^2} - \frac{G M}{(R-r)^2} = \omega^2 r$$

Then for part B I use Newton's method and Its pretty straightfoward with the formula

$$x_1 = x_0 - \frac{f(x_0)}{f'(x_0)}.$$

and then proceed to target accuracy.