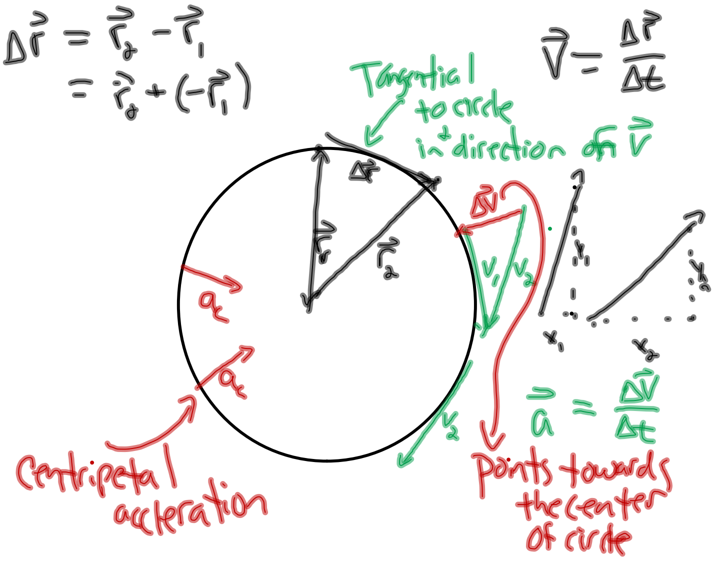
$$\Delta\vec{r} = \vec{r}_2 - \vec{r}_1$$
$$= \vec{r}_2 + (-\vec{r}_1)$$

$$\vec{V} = \frac{\Delta\vec{r}}{\Delta t}$$



(for uniform circular motion only) ratio of

$$\frac{\Delta r}{r} = \frac{\Delta V}{V}$$

$$v \cdot \frac{v}{r} = \frac{a}{v} \cdot v$$

$$a_c = \frac{v^2}{r}$$

$V = V_t$ = Velocity$_{tangential}$

$|V_t|$ = constant + circular $= \frac{2\pi r \text{ circumference}}{T = \text{Period}}$

$$s = \frac{d}{t}$$

$$a_c = \frac{\left(\frac{2\pi r}{T}\right)^2}{r} = \frac{\frac{4\pi^2 r^2}{T^2}}{\frac{r}{1}} = \frac{4\pi^2 r^2}{r T^2}$$

$$a_c = \frac{4\pi^2 r}{T^2}$$

$$\frac{2\pi}{T} = \text{angular speed} = \omega \left(\frac{\text{rad}}{\text{sec}}\right)$$

$$a_c = \omega^2 r$$

Angular speed of earth

$$\frac{2\pi \text{ rad}}{24 \text{ hr}} \cdot \frac{1 \text{ hr}}{3600 \text{ s}} = (7.3 \times 10^{-5})^2 \text{ rad/sec}$$

$$D_e = \frac{12,756 \times 10^3 \text{ m}}{2} = 6,378 \times 10^3 = 6.38 \times 10^6 \text{ m}$$

$a_c = .034 \text{ m/s}^2$

Centripetal force

$F_{net} = ma_c$

Towards center