# Physics 2A 1st Midterm Formula Sheet
# Spring 2005

$$v_{av} = \frac{l}{t} \qquad l = v_{con} t \qquad v = \lim_{\Delta t \to 0} \left[ \frac{\Delta l}{\Delta t} \right] \qquad \vec{v}_{av} = \frac{\vec{s}}{t} \qquad \vec{v} = \lim_{\Delta t \to 0} \left[ \frac{\Delta \vec{s}}{\Delta t} \right]$$

$$A_y = \left| \vec{A} \right| \sin\theta \qquad A_x = \left| \vec{A} \right| \cos\theta \qquad C_x = A_x + B_x \qquad C_y = A_y + B_y \qquad C = \sqrt{C_x^2 + C_y^2}$$

$$\theta = \tan^{-1} \frac{\left| C_y \right|}{\left| C_x \right|} \qquad \vec{v}_{TE} = \vec{v}_{TR} + \vec{v}_{RE}$$

$$\vec{a}_{av} = \frac{\Delta \vec{v}}{\Delta t} = \frac{\vec{v}_{\mathrm{f}} - \vec{v}_i}{t_{\mathrm{f}} - t_i} \qquad a_{av} = \frac{\Delta v}{\Delta t} = \frac{v_{\mathrm{f}} - v_i}{t_{\mathrm{f}} - t_{\mathrm{i}}} \qquad \vec{a} = \lim_{\Delta t \to 0} \left[ \frac{\Delta \vec{v}}{\Delta t} \right] \qquad v_{\mathrm{f}} = v_i + a_T t$$

$$v_{av} = \frac{1}{2}(v_i + v_{\mathrm{f}}) \qquad s = \frac{1}{2}(v_i + v_{\mathrm{f}})t \qquad s = v_i t + \frac{1}{2} a_T t^2 \qquad v_{\mathrm{f}}^2 = v_i^2 + 2 a_T s$$

$$\vec{F} = \frac{\Delta \vec{p}}{\Delta t} \qquad \sum \vec{F} = m\vec{a} \qquad F_{av} = m a_{av} \qquad \vec{F}_w = m\vec{g} \qquad F_f(\max) = \mu_s F_N$$

$$F_f = \mu_k F_N \qquad F_f = \mu_r F_N \qquad \sum \vec{F} = 0 \qquad \sum F_x = 0 \qquad \sum F_y = 0$$

$$a_c = \frac{v^2}{r} \qquad F_C = m a_C = \frac{m v^2}{r} \qquad \tan\theta = \frac{v^2}{gr} \qquad F_G = G \frac{mM}{r^2} \qquad g_0 = \frac{GM_\oplus}{R_\oplus^2}$$

$$g_\oplus = \frac{GM_\oplus}{r^2} \qquad \frac{r_{\mathrm{O}}^3}{T^2} = C_{\mathrm{O}} \qquad v_o = \sqrt{\frac{GM}{r}}$$