

Exam 2- Constants and Formulas

$$g = 9.8 \text{ m/s}^2 \quad G = 6.67 \times 10^{-11} \text{ Nm}^2 / \text{kg}^2$$

$$M_E = 5.98 \times 10^{24} \text{ kg} \quad R_E = 6.38 \times 10^6 \text{ m}$$

$$M_S = 1.99 \times 10^{30} \text{ kg} \quad R_S = 6.96 \times 10^8 \text{ m}$$

$$M_m = 7.35 \times 10^{22} \text{ kg} \quad R_m = 1.74 \times 10^6 \text{ m}$$

$$R_{ES} = 1.5 \times 10^{11} \text{ m}$$

$$R_{Em} = 3.85 \times 10^8 \text{ m}$$

$$x = x_0 + v_0 t + \frac{1}{2} a t^2 \quad v = v_0 + a t \quad v^2 = v_0^2 + 2a(x - x_0)$$

$$\vec{F}_{NET} = m\vec{a} \Rightarrow F_{NET,x} = ma_x \quad \& \quad F_{NET,y} = ma_y$$

$$F_G = G \frac{m_1 m_2}{r^2} \quad w = mg \quad f_s^{\max} = \mu_s F_N \quad f_k = \mu_k F_N$$

$$\vec{F}_C = m\vec{a}_C \quad a_C = \frac{v^2}{r} \quad v = \frac{2\pi r}{T}$$

$$W = Fs \cos(\theta)$$

$$KE = \frac{1}{2} mv^2$$

$$W = KE_f - KE_0 = \frac{1}{2} mv_f^2 - \frac{1}{2} mv_0^2$$

$$PE_g = mgh$$

$$E = KE + PE$$

$$W_{NC} = E_f - E_0$$