

Equations for Exam 2

Chapter 5

$$\vec{F}_{\text{net}} = m\vec{a}$$

$$F_g = mg$$

$$F_f < \mu_s F_N$$

$$F_f = \mu_k F_N$$

$$1\text{N} = 1\text{ kg m/s}^2$$

$$g = 9.8\text{ m/s}^2$$

Chapter 6

$$F_c = \frac{mv^2}{R}$$

$$F_R = -bv \quad \text{or}$$

$$F_R = \frac{1}{2}D\rho Av^2$$

Chapter 7

$$W = \int \vec{F} \cdot d\vec{s} \quad \text{or} \quad W = \vec{F} \cdot \Delta\vec{s} \quad \text{or} \quad W = \int F(x)dx \quad \text{or} \quad W = F\Delta x$$

$$K = \frac{1}{2}mv^2 \quad \Delta K = W \quad \Delta U = -W \quad E = K + U \quad F = -\frac{dU}{dx}$$

Special cases: $U_g = mgh$

$$U_s = \frac{1}{2}kx^2 \quad \text{for } F_s = -kx$$

$$1\text{ J} = 1\text{ N m}$$

$$\vec{A} \cdot \vec{B} = AB\cos\theta = A_x B_x + A_y B_y + \dots$$

Chapter 8

$$\Delta E = W_{nc}$$

$$P = \frac{dW}{dt} = \vec{F} \cdot \vec{v}$$

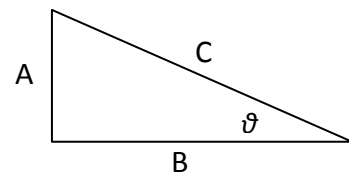
$$1\text{ W} = 1\text{ J/s}$$

$$1\text{ hp} = 746\text{ W}$$

Mathematics

$$\sin\theta = \frac{A}{C} \quad \cos\theta = \frac{B}{C} \quad \tan\theta = \frac{A}{B}$$

$$C^2 = A^2 + B^2$$



$$s = r\theta \quad A = \pi r^2$$

$$\frac{dx^n}{dx} = nx^{n-1} \quad \int x^n dx = \frac{x^{n+1}}{n+1}$$

