

PHY 1053 and 1054 Formula sheet

$$S = S_0 + v_0 t + \frac{1}{2} a t^2 \qquad F_{net} = ma \qquad a_c = \frac{v^2}{r} \qquad W_{total} = \Delta K$$

$$W = F d cos \theta \qquad \vec{J} = \vec{F} \Delta t = \Delta \vec{p} \qquad \omega = \alpha t + \omega_0 \qquad a = r\alpha$$

$$v = r \omega \qquad \tau = F_{perp} l \qquad \Sigma \tau = I \alpha \qquad v = \lambda f$$

$$x = A \cos(\omega t) \qquad v = -\omega A \sin(\omega t) \qquad a = -\omega^2 A \cos(\omega t) \qquad \frac{F_1}{A_1} = \frac{F_2}{A_2}$$

$$P_0 A - \rho A - \rho g h A = 0 \qquad P + \rho g + \frac{1}{2} \rho v^2 = constant \qquad L = L_0 (1 + \alpha \Delta T) \qquad V = V_0 (1 + \beta \Delta T)$$

$$Q = m c \Delta T \qquad Q = L m \qquad PV = nRT \qquad W = P \Delta V$$

$$W = nRT \ln(\frac{V_2}{V_1}) \qquad \Delta U = -W \qquad \Delta U = Q \qquad p(V_2 - V_1) = W$$

 $T_1 V_1^{\gamma - 1} = T_2 V_2^{\gamma - 1}$ $e = \frac{W}{Q_H} = 1 - \left| \frac{Q_C}{Q_H} \right|$

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$$\varphi = BA\cos\theta$$

$$\varepsilon = \omega A B \sin(\omega t)$$

Junction:
$$I_{in} = I_{ou}$$

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 Loop: sum of V in loop =0

$$I = \frac{1}{2}\epsilon_{0c}E_{max}^2$$

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$$\frac{1}{f} = (n-1)(\frac{1}{R_1} - \frac{1}{R_2})$$
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Momentum is conserved in all collisions; Energy is conserved in elastic collisions.

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