$$v = \sqrt{\frac{\tau}{\mu}}$$

$$v = \sqrt{\frac{B}{\rho}}$$

$$y = y_m \sin(kx - \omega t)$$

$$P_{avg} = \frac{1}{2}\mu\omega^2 \, y_m{}^2 \, v$$

$$S = S_m \cos(kx - \omega t)$$

$$\Delta P = \Delta P_m \sin(kx - \omega t)$$

$$\Delta P_m = \rho v \omega S_m$$

$I = ½ \rho (\omega S_m)^2 v$

$$\beta = 10 \log\left(\frac{I}{I_o}\right), \quad I_o = 10^{-12} \text{ W/m}^2$$

$$I = \frac{P_s}{4\pi r^2}$$

$$f' = f\left(\frac{v \pm v_D}{v \mp v_s}\right)$$

$y = 2 y_m \cos(\phi/2) \sin(kx - \omega t + \phi/2)$

$y = 2 y_m \sin kx \cos \omega t$

$$f_n = \frac{nv}{2L}, \qquad n = 1,2,3,...$$

$$f_n = \frac{nv}{4L}, \qquad n = 1,3,5...$$

$$\Delta L = \frac{\lambda}{2\pi}\varphi$$

$$\Delta L = m\lambda \qquad m = 0,1,2,....$$

$$\Delta L = \left(m + \frac{1}{2}\right)\lambda, \qquad m = 0,1,2,....$$

$T_c = T - 273$

$$T_F = \frac{9}{5}T_C + 32$$

$$\Delta L = \alpha L \Delta T$$

$\Delta V = \beta V \Delta T$

$$PV = nRT = NkT$$

$$PV^{\gamma} = \text{constant}$$

$$TV^{\gamma - 1} = \text{constant}$$

$$\Delta S = nR \ln \frac{V_f}{V_i} + nC_V \ln \frac{T_f}{T_i}$$

$$Q = mL$$

$$Q = mc\Delta T$$

$Q = n C_V \Delta T$

$Q = n C_P \Delta T$

$$\Delta E_{int} = Q - W$$

$$\Delta E_{int} = nC_V \Delta T$$

$C_p - C_v = R$

$$W = \int P dV$$

$$W = nRT \ln(V_f / V_i)$$

$$P_{cond} = \frac{Q}{t} = \frac{kA(T_H - T_C)}{L}$$

$$\frac{m\overline{v^2}}{2} = (3/2)kT$$

$$v_{rms} = \sqrt{\frac{3RT}{M}}$$

$W = Q_H - Q_L$

$$\varepsilon = \frac{W}{Q_H} = 1 - \frac{Q_L}{Q_H}$$

$$K = \frac{Q_L}{W}$$

$$\frac{Q_L}{Q_H} = \frac{T_L}{T_H}, \quad \Delta S = \int \frac{dQ}{T}$$

Constants:

1 Liter = 10^{-3} m^3

1 atm = 1.01 x 10^5 N/m^2

R = 8.31 J/mol K

N_A = 6.02 x 10^{23} molecules/mole

k = 1.38 x 10^{-23} J/K

μ = micro = 10^{-6}

For water:

c = 4190 J/kg.K

L_F = 333 kJ/kg

L_V = 2256 kJ/kg