

### Physics 190 Formula Sheet 3

$$W = \int_{V_1}^{V_2} P dV$$

$$dU = dQ - dW$$

$$P = \frac{2NK}{3V}$$

$$K = \frac{3}{2} k_B T$$

$$v_{rms} = \sqrt{\frac{3k_B T}{m}}$$

$$U = \frac{3}{2} N k_B T$$

$$C_V = \frac{f}{2} R$$

$$C_P - C_V = R$$

$$dQ = n C_V dT$$

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$$P V^\gamma = \text{constant}$$

$$\gamma = \frac{C_P}{C_V}$$

$$W = |Q_h| - |Q_c|$$

$$e = \frac{W}{|Q_h|}$$

$$e_{\max} = 1 - \frac{T_c}{T_h}$$

$$dS = \frac{dQ}{T}$$