A hodge-podge of equations:

\[
P^2 = \frac{4\pi^2}{GM}a^3 \quad \text{d}F = \frac{2GMm}{r^3}\text{d}r
\]

\[
v_{\text{esc}} = \sqrt{\frac{2GM}{r}} \quad v_{\text{circ}} = \sqrt{\frac{GM}{r}}
\]

\[
r_{\text{lim}} < 2.5\left(\frac{\bar{\rho}_p}{\rho_m}\right)^{1/3}R_p
\]

\[
\lambda_{\text{max}}(cm) = \frac{0.29}{T(K)}
\]

\[
r_{\text{peri}} = a(1 - e) \quad r_{\text{apo}} = a(1 + e)
\]

\[
B_{\lambda}(T) = \frac{2\hbar e^2/\lambda^5}{e^{hc/\lambda kT} - 1}
\]

\[
E_n = -\frac{13.6}{n^2} \text{eV}
\]

\[
H = \frac{kT}{mg}
\]

\[
V_t = 4.74\mu''(\text{yr})d(\text{pc})
\]

\[
\langle M_V \rangle = -2.43 \log P - 1.62
\]

\[
[\text{Fe/H}] = \log(\text{Fe/H})_* - \log(\text{Fe/H})_\odot
\]

\[
M_I = -8.7 \log(v_c/300) - 22.9
\]

\[
M = \frac{L}{4\pi cGm} \quad \mu(r) = \mu_0 + 1.09(r/h)
\]

\[
v = H_0d
\]

\[
1 + z = \frac{1}{R} \quad t_H = 1/H_0
\]

\[
\left(\frac{\dot{R}}{R}\right)^2 - \frac{8}{3}\pi G\rho - \frac{1}{3}\Lambda c^2 = -\frac{kG^2}{R^2}
\]

\[
2T + U = 0
\]
Possibly Useful Constants and Conversions:

- Solar B-band Magnitudes: \( m_B = -26.14, M_B = +5.42 \)
- Solar V-band Magnitudes: \( m_V = -26.8, M_V = +4.76 \)
- Solar I-band Magnitudes: \( m_I = -27.5, M_I = +4.08 \)
- Gravitational constant: if time is measured in years, distances in AU, and masses in solar masses, \( G = 39.5 \text{ AU}^3 \text{ M}_{\odot}^{-1} \text{ yr}^{-2} \)
- Gravitational constant: if time is measured in Myr, distances in pc, masses in solar masses, and velocities in km/s, \( G = 4.43 \times 10^{-3} \text{ pc}^3 \text{ M}_{\odot}^{-1} \text{ Myr}^{-2} \). Or, equivalently, \( G = 4.43 \times 10^{-3} \text{ pc} \left(\frac{\text{km/s}}{\text{s}}\right)^2 \text{ M}_{\odot}^{-1} \)
- Stefan-Boltzmann constant \( \sigma = 7.18 \times 10^{-17} \) if luminosities are measured in solar luminosities, temperature is measured in Kelvin, and sizes are measured in solar radii.
- Hubble constant: \( H_0 \approx 70 \text{ km/s/Mpc} \)
- 1 parsec (pc) = 206,265 AU
- 1 arcsecond ("') = 1/3600 degrees = 4.85 \times 10^{-6} \) radians
- 1 Angstrom (Å) = 10^{-8} \) cm
- 1 year = 3.15 \times 10^7 \) s
- 1 km/s \approx 1 \text{ pc/Myr}