

Equation sheet for quizzes and exam.

This sheet may be printed out and brought into all in-class quizzes and the final exam, with NO annotations on it. It is your responsibility to understand how to use the equations, including necessary units. If using this sheet, it must be placed on your workspace in full view. It is your responsibility to bring a copy, as spares may not be available on the day. By printing out and using this equation sheet, you agree to have read, understood and adhere to these requirements.

- The Doppler formula $\frac{\Delta\lambda}{\lambda} = \frac{v}{c}$.
- Kepler's 3rd law: $P^2 = a^3/M$
- Conversion between mass and energy: $E = mc^2$
- For black holes, the Schwarzschild radius is calculated from: $R_s = \frac{2GM}{c^2}$.
- Black body radiation (Wien's law): $\lambda = 3 \times 10^6/T$.
- Hubble's law: $v = Hd$
- Luminosity relation in stars: $L/L_{sun} = (R/R_{sun})^2 \times (T/T_{sun})^4$