**IB Physics**

**PreQuiz 33.1**

Name

Funniest Moment in Class

1. A star has a Luminosity of 4.5 x 1026 W, and a peak black body radiation of 520 nm. What is its radius? (8.08 x 108 m)

# 2. A star has an apparent brightness of 2.35x10-14W/m2. If it has an absolute magnitude of 2.3, how many parsecs are we from it? (3590 ≈ 3600 pc)

3. A galaxy is 23 Mpc from us. At what wavelength would we see the 486 nm spectral line for Murrayium from that galaxy. (Use H = 71 km/s/Mpc) (488.6 ≈ 489nm)

4. A very strong concertmaster is on top of a 148 m tall tower near a black hole where the gravitational field strength is 5.53x1012 m/s/s. If another player is making a frequency of 440.0 Hz at the bottom, what frequency does the concertmaster hear at the top? What beat frequency do they hear? (436. Hz, and 4.00 beats per second)

5. A black hole has a mass of 21 solar masses. (The mass of the sun is 1.99x1030 kg.) \*Calculate the radius of the event horizon, \*Calculate the time it would take a clock 160 km beyond the event horizon to register 60. seconds of elapsed time as we observe it from a great distance. (62 km, 71 s)