Space: Orbits, Stars and the Universe

Space physics · 4 questions · step-by-step answers at the end

Name: Date: Score: / 4

USEFUL EQUATIONS

$v = 2\pi r / T$

Questions

Show your working in the space under each question.

1. What does the red-shift of distant galaxies tell us?

2. The International Space Station orbits 6.77×10^6 m from Earth's centre once every 5540 s. Find its speed.

3. Where in its orbit does a comet move fastest, and why?

4. What will the Sun become at the end of its life?

Step-by-step answers

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1. They are **moving away** from us, and more distant ones move faster, so the **Universe is expanding**.

2. 1. $v = 2\pi r/T = 2\pi \times 6.77 \times 10^6/5540$.
   2. v = **7700 m/s** (7.7 km/s).

   Answer: 7.7 km/s

3. **Closest to the Sun**: gravity is strongest there, and potential energy has been transferred to kinetic energy.

4. A red giant, then a **white dwarf** (and eventually a black dwarf).