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ASTR 1050

Fall 2025

1. The speed of light is $3 \times 10^8 \text{ m s}^{-1}$. Convert this speed into pc yr^{-1} . There are $3.09 \times 10^{16} \text{ m}$ in one parsec.

2. An oil tank can hold 8 m^3 of liquid. Convert this capacity into gallons, knowing there are 1000 L in 1 m^3 , and 3.78 L in 1 gallon.

3. The star Polaris (α Ursae Minoris Aa) has a stellar luminosity of 4.823×10^{29} W. If the Sun has luminosity 3.828×10^{26} W, calculate the luminosity of Polaris in solar luminosity units (symbolized by L_{\odot}).

4. The star ζ Ophiuchi has a radius of 9.1 times the radius of the Sun. If the radius of the Sun is 6.957×10^{10} cm, find the radius of ζ Ophiuchi in kilometers.

Answer key: (1) 0.305 pc; (2) 2116 gallons; (3) $1260 L_{\odot}$; (4) 6.33×10^6 km
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