HW 9-1 Soln)

We're given that, for hydrogen, the allowed energy levels are

$$\mathrm{E_n} = \frac{-13.6 \,\mathrm{eV}}{\mathrm{n}^2} \;.$$

The photon energy is the difference in the two hydrogen levels,

$$E_{photon} = E_4 - E_1 = \frac{-13.6 \text{ eV}}{4^2} - \frac{-13.6 \text{ eV}}{1^2} = \frac{15}{16} 13.6 \text{ eV} = \frac{12.8 \text{ eV}}{12.8 \text{ eV}}$$
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