Tutorial 1 Question

- Text: Ch. 42: Pr. 6.
- (a) What is the approximate radius of a $^{64}_{29}$Cu nucleus?
  (b) Approximately what is the value of A for a nucleus whose radius is 3.9×10^{-15} m?

Solution

(a) We know $\boxed{r \approx (1.2 \times 10^{-15} \text{ m})A^{1/3}}$ and $^{64}_{29}$Cu has an atomic mass $A = 64$ so

$$r \approx (1.2 \times 10^{-15} \text{ m})(64)^{1/3} \approx 4.8 \times 10^{-15} \text{ m}.$$

(b) This time we are given $r = 3.9 \times 10^{-15}$ m and asked to estimate the atomic mass A,

$$A \approx \left[\frac{r}{1.2 \times 10^{-15} \text{ m}} \right]^3 \approx 34.$$