Short Problems: Natural Units

You do not need to turn this in.

1. The Planck length is

$$l_P \equiv \left(\frac{G\hbar}{c^3}\right)^{1/2} .$$

What is the value of the Planck length in natural units?

What is the value of the Planck length in GeV^{-1}?

What is the value of the Planck length in cm?

2. The Planck time is

$$l_P \equiv \left(\frac{G\hbar}{c^5}\right)^{1/2} .$$

What is the value of the Planck time in natural units?

What is the value of the Planck time in GeV^{-1}?

What is the value of the Planck length in sec?

3. A "natural" value for the density of quantum vacuum energy is one Planck mass per cubic Planck length. What is the ratio of this density to the present-day critical density?