

HW 1

Johannes Byle

March 26, 2019

7.10 (a)

$$E_F = \frac{\hbar}{2m} \left(\frac{\pi N}{2L} \right)^2$$

7.10 (b)

$$E_{avg} = \frac{3}{5} E_F$$

7.12 25. $\frac{1}{26}, \frac{25}{26}$

7.20 (a)

$$\Phi = \sigma T^4 \frac{4\pi r^2}{4\pi D^2}$$
$$\sqrt{\frac{D^2 \Phi}{\sigma T^4}} = r$$

7.20 (b) Electron Degeneracy Pressure

7.24 (a)

$$\sigma T_{sun}^4 \frac{4\pi R_{sun}^2}{4\pi D^2}$$

$$\sqrt[4]{T_{sun}^4 \frac{4\pi R_{sun}^2}{4\pi D^2}} = T_{planet}$$

7.24 (b)

$$\sqrt[4]{T_{sun}^4 \frac{4\pi R_{sun}^2}{(.7)4\pi D^2}} = T_{planet}$$

7.24 (c) $T_{planet} 1.5$