Quiz 24.1A

The Sun radiates power at a rate of 4.00×10^{26} Watts. That energy is spread uniformly over all space, and Earth receives some fraction of that energy.

a) Assuming an Earth-Sun distance of 93.0 million miles, calculate the **intensity of light** from the Sun at this distance. Answer with 3 SF, and show all work.
b) Suppose we design an orbiting solar panel for the Earth that can collect the Sun's energy with 100% efficiency. This circular array of solar panels has a radius of 225 km. How much **power** would this array collect?
c) Assume that the amount of energy used by all of humanity in one day is 2.20×10^{18} Joules. How much **time** would it take for our solar array to collect that much energy, **in hours**?