

6. [6 points] The *Lambda* app team needs to set up an internet connection for their new office. They will utilize both fiber internet and wireless 5G. Due to some serious issues with the building, the team knows that 10% of the data transferred via fiber will be lost, and 30% of the data transferred via the wireless connection will be lost. Assume throughout this problem that, each month, the company loses exactly 15 gigabytes (GB) of transferred data.
- a. [2 points] If each month, the team transfers F GB of data via fiber and W GB via wireless, write a formula for F in terms of W .

Answer: $F =$ _____

However, the team also wants to consider the monthly energy consumption of the methods, which, in gigajoules (GJ), is given by

$$(W + 1)^4 + (F + 4)^2.$$

- b. [1 point] Write a formula for the energy $\mathcal{E}(W)$, in GJ, as a function of W only. *Your formula should not include the letter F .*

Answer: $\mathcal{E}(W) =$ _____

- c. [3 points] Additionally, the team wants to ensure that $2W \geq F$. Including this additional constraint, what is the domain of the function $\mathcal{E}(W)$ in the context of this problem?

Answer: _____