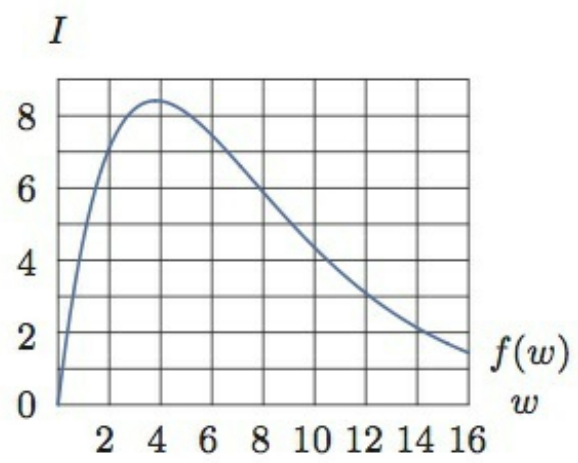
F-IF Influenza epidemic

Task

An epidemic of influenza spreads through a city. The figure below is the graph of $I = f(w)$, where I is the number of individuals (in thousands) infected w weeks after the epidemic begins.



a. Estimate $f(2)$ and explain its meaning in terms of the epidemic.

b. Approximately how many people were infected at the height of the epidemic? When did that occur? Write your answer in the form $f(a) = b$.

c. For approximately which w is $f(w) = 4.5$; explain what the estimates mean in terms of the epidemic.

d. An equation for the function used to plot the image above is $f(w) = 6w(1.3)^{-w}$. Use the graph to estimate the solution of the inequality $6w(1.3)^{-w} \geq 6$. Explain what the solution means in terms of the epidemic.

(Task from *Functions Modeling Change: A Preparation for Calculus, Connally et al., Wiley*