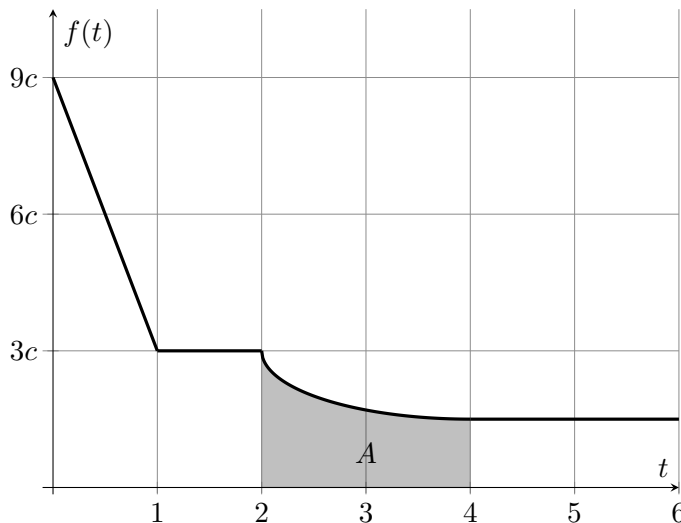


1. [8 points] Ricky's college has installed a new model of napping pod in the library for students to get some well-deserved rest. Let $f(t)$ be the **probability density function** (pdf) for the amount of time, t , Ricky sleeps after he falls asleep in a pod, where t is measured in hours. A **partial** graph of $f(t)$ is shown below. Note that $f(t)$ is piecewise linear on the interval $[0, 2]$ and that $f(t) = 0$ for all $t < 0$.



Additionally, you may assume that c is a positive real number, and that the value of the shaded area between $f(t)$ and the t -axis on $[2, 4]$ is given by the positive number A .

- a. [2 points] Suppose $f(8) = 0.03$. Complete the following sentence:

“The probability that Ricky gets between 7.8 hours and 8.2 hours of sleep is ...”

- b. [2 points] Find the probability that Ricky gets 1 or fewer hours of sleep. Your answer may be given in terms of c .

Answer: _____

- c. [2 points] Suppose that there is a 15% chance that Ricky gets 4 hours of sleep or more. Find the value of A in terms of c .

Answer: _____

- d. [2 points] The median amount of time Ricky spends sleeping in a pod is 1 hour and 30 minutes. Find the value of c .

Answer: _____