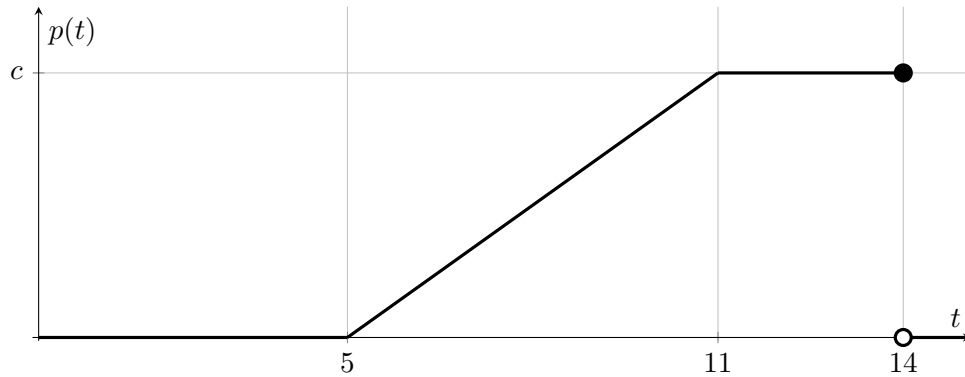


5. [9 points] Littorina the snail competes in a weekly race. The probability density function (pdf), $p(t)$ which describes the time in minutes it takes Littorina to finish the weekly race is depicted below. Note that $p(t)$ is piecewise linear, and that $p(t) = 0$ for $t < 5$ and $t > 14$.



- a. [3 points] Find the value of c which makes $p(t)$ a probability density function.

Answer: $c =$ _____

- b. [6 points] Find the function $P(t)$ which describes the probability that Littorina completes the weekly race in t minutes or less. Your formula should not contain any integral signs, but may include the letter c .

$$\text{Answer: } P(t) = \begin{cases} \text{_____}, & t < 5 \\ \text{_____}, & 5 \leq t < 11, \\ \text{_____}, & 11 \leq t < 14, \\ \text{_____}, & t \geq 14 \end{cases}$$