1. [8 points] The graph of a piecewise-linear cumulative distribution function $P(x)$ is given below. The function $P(x)$ is defined for all real numbers $x$ and is constant for $x < a$ and for $x > 14$.

![Graph of a piecewise-linear cumulative distribution function]

a. [3 points] The median value for $x$ is 10. Use this fact, and the fact that $P(x)$ is a cumulative distribution function to find the value of $a$. No justification is needed but you may earn partial credit if you show your work.

b. [5 points] Find a formula for a probability density function $p(x)$ which corresponds to $P(x)$. Make sure to define your formula for all values of $x$, using a piecewise-defined formula if necessary. You may give your answer in terms of $a$. 

Fall, 2020 Math 116 Exam 2 Problem 1