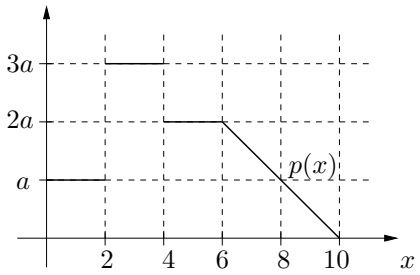
3. [14 points] For the graduating class of 2010 from a major university (its name concealed so as to protect its identity), the probability density function, $p(x)$, for the number of job offers, x, obtained by a graduate is shown in the figure to the right. The value a appearing in the values on the y-axis of this figure is a constant.



(a) [3 points of 14] What is the value of a?

(b) [3 points of 14] What is the probability that a graduate will get at least 4 but no more than 8 job offers?

(c) [4 points of 14] Write, but do not evaluate, an expression giving the mean number of job offers obtained by a graduate. Explain in one sentence how you would evaluate your expression.

(d) [4 points of 14] Write an expression that gives the median number of job offers obtained by a graduate. Use your expression to find the median.