3. [11 points] Show your work, but no explanation is necessary. For parts a, c, and d, be sure to pay close attention to whether the question is asking you for a median or a mean.

a. [3 points] Compute the median value of a quantity that has cumulative distribution function given by

\[ \begin{align*}
0 & \quad \text{if } x < 0 \\
1 - e^{-\left(\frac{x}{r}\right)^k} & \quad \text{if } x \geq 0
\end{align*} \]

Here \( r \) and \( k \) are constants, and your answer may involve one or both of these constants.

Answer: median = ________________________________

Use the probability density function \( p(x) \) shown in the graph below for parts b-d.

\[ y = p(x) \]

b. [2 points] Use the fact that the graph above shows a probability density function to find the value of the constant \( c \).

Answer: \( c = \) ________________________________

c. [3 points] Compute the mean of the quantity with probability density function shown in the graph above.

Answer: mean = ________________________________

d. [3 points] Compute the median of the quantity with probability density function shown in the graph above.

Answer: median = ________________________________