The probability density function of a random variable $X$ is:

$$f(x) = \begin{cases} 
    c \cdot \sin(x) & \quad 0 < x < \pi \\
    0 & \quad \text{elsewhere}
\end{cases}$$

Determine the value of the constant $c$.

What is the probability of finding $x$ in the interval $x \in [0, \pi/2]$?