23. Let X be a continuous random variable with probability density function (PDF) $f_X(x)$ and CDF $F_X(x)$. For a fixed number x_0 define the function

$$g(x) = \begin{cases} \frac{f_X(x)}{1-F_X(x_0)}, & x \geq x_0 \\ 0, & x < x_0 \end{cases}$$

Prove $g(x)$ is a PDF.