

Suppose X is a continuous random variable, uniformly distributed on $[1, 27]$. Let $W := X^{1/3}$.

1. [5 pts] Complete the following calculation by supplying the missing numbers:

$$\begin{aligned} P(W \leq 2) &= P(X^{1/3} \leq 2) \\ &= P\left(X \leq \underline{\hspace{2cm}}\right) \\ &= \underline{\hspace{2cm}} \end{aligned}$$

Let $G(w) := P(W \leq w)$ be the cdf of W .

2. [5 pts] $G(w) = 0$ if w is in $(-\infty, \underline{\hspace{2cm}})$.
3. [5 pts] $G(w) = 1$ if w is in $(\underline{\hspace{2cm}}, \infty)$.
4. [5 pts] Express $G(w) = P(W \leq w)$ as a polynomial function of w on the interval where it is non-zero.

5. [5 pts] What is the pdf of W ?