

Suppose X is a continuous random variable with pdf f .

1. [5 pts]

$$P(a \leq X \leq b) = \underline{\hspace{2cm}}.$$

2. [5 pts] The function $F(t) := \int_{-\infty}^t f(x) dx$ is called the

- a) antiderivative of X ;
- b) cumulative distribution function of X ;
- c) improper integral of X ;
- d) Riemann integral of X ;
- e) the expectation of X .

3. [5 pts]

$$\int_{-\infty}^{+\infty} f(x) dx = \underline{\hspace{2cm}}.$$

4. [5 pts] $\int_{-\infty}^{+\infty} x f(x) dx$ is called the _____ of X .

5. [5 pts] If X is uniform on $[1, 7]$, then

$$f(x) = \begin{cases} \underline{\hspace{1cm}} & \text{if } \underline{\hspace{1cm}}; \\ \underline{\hspace{1cm}} & \text{if } \underline{\hspace{1cm}}. \end{cases}$$