

Please write ***Your name:*** _____

Show all work. You should either write at a sentence explaining your reasoning, or annotate your math work with brief explanations. There is no need to simplify, and no calculators are needed.

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Let X be a uniform random variable on the interval $[1, 3]$.

(1) Find the formula, with cases, for the c.d.f. $F_X(x)$.

(2) Sketch the plot for the c.d.f. $F_X(x)$.

Let again X be a uniform random variable on the interval $[1, 3]$.

(3) Find $\mathbb{E}e^X$.

(4) Find $\mathbb{E}\frac{1}{X}$.

Let again X be a uniform random variable on the interval $[1, 3]$ and $Y = \frac{1}{X}$.

- (5) Find the c.d.f. $F_Y(y)$ of Y . *Hint: it may be useful if first you find the range of Y , and use cases to define the c.d.f.*

- (6) Find the p.d.f. $f_Y(y)$ of Y .

(End of the quiz)