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 \( \mathbb{E}\frac{1}{X} \).

(more questions on the next page)
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)