

*Please write* ***Your name:*** \_\_\_\_\_

You may leave your answer in terms of sums, products, factorials or binomial coefficients, and fractions. There is NO need to simplify. NO calculators are needed.

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Suppose  $X$  has the following p.d.f.

$$f(x) = \begin{cases} a(x-1) & \text{if } 1 \leq x \leq 3 \\ 0 & \text{otherwise} \end{cases}$$

(1) Find  $a$

(2) Find  $\mathbb{P}(X \leq 2)$

(More on the next page)

Suppose  $X$  has the following p.d.f.

$$f(x) = \begin{cases} \frac{1}{4} & \text{if } -2 \leq x \leq 2 \\ 0 & \text{otherwise} \end{cases}$$

(3) Find  $\mathbb{E}X$

(4) Find  $\text{Var}(X)$

(More on the next page)

Suppose  $X$  has the following p.d.f.

$$f(x) = \begin{cases} \frac{1}{x^2} & \text{if } x \geq 1 \\ 0 & \text{otherwise} \end{cases}$$

(5) Find  $\mathbb{P}(X \leq 3)$

(6) Can you find  $\mathbb{E}X$ ? Explain your answer.

(End of the quiz)