RUES (1, 20),



## GRUPA B

## Ime i prezime: WANA

Napomene:

Nap. 1. Ukoliko nešto ne znate izračunati do kraja, molim da barem napišete što treba izračunati.

Nap. 2. U zadatku 1. i 2., u najgorem slučaju, b) i c) se mogu rješavati koristeći tvrdnju pod a).

1. Slučajna varijabla X je zadana zakonom razdiobe

$$P\{X=n\} = C \cdot (n-1) \left(\frac{2}{3}\right)^{n-2}, \ n=2,3,...$$
(a) Dokazati da mora biti  $C = \frac{C}{9}$ .
(b) Izračunati  $P\{X \ge 4\}$ .

- (c) Izračunati E(X).
- 2. Slučajna varijabla X je zadana funkcijom gustoće

$$f(x) = Ce^{-2x}, x > 0.$$

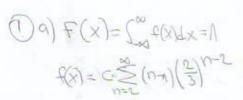
(za ostale x je f(x) = 0).

- (a) Dokazati da mora biti C = 2.
- (b) Izračunati  $P\{X \geq 2\}$ .
- (c) Izračunati E(X).
- Slučajna varijabla X je zadana funkcijom razdiobe

$$F(x) = 2x - x^2, \ x \in (0, 1)$$

 $(za \ x \le 0 \ je \ F(x) = 0, \ a \ za \ x \ge 1 \ je \ F(x) = 1.)$ 

- (a) Izračunati  $P\{X \geq \frac{1}{3}\}$ .
- (b) Izračunati E(X).



b) 
$$F(x \ge 4) = 1 - F(X < 4) = 1 - (F(X = 2) + F(X = 3))$$

$$= 1 - (\frac{1}{24} + \frac{1}{9} + \frac{1}{3})$$

$$= 1 - (\frac{1}{24}) = \frac{20}{24}$$

e)∈(x)=[~x.f(x)



$$\begin{array}{ll}
(2) & f(x) = Ce^{-tx} | x > 0 \\
f(x) = \int_{-\infty}^{\infty} f(x) \frac{1}{x} \\
f(x) = \int_{-\infty}^{\infty} C \cdot e^{-tx} dx \\
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f$$

$$\begin{array}{l}
2 = 1 \\
C = 2
\end{array}$$

$$C = 2$$

$$F(x \ge 2) = \int_{2}^{\infty} 2 e^{2x} \\
= 2 \cdot \frac{e^{-1x}}{2} \Big|_{2}^{\infty}$$

$$= -\left(0 - e^{-1}\right)$$

$$= e^{-1}$$

$$C) \in (X) = \int_{-\infty}^{\infty} x \cdot 2 \cdot e^{-2x} dx$$

$$= 2 \int_{-\infty}^{\infty} x e^{-2x} dx$$

$$\begin{array}{l}
3) F(8) = 2x - x^{2} \\
P(x \ge \frac{1}{3}) = \int_{\frac{1}{3}}^{1} (2x - x^{2}) dx
\end{array}$$

$$= \int_{\frac{1}{3}}^{1} 2x dx - \int_{\frac{1}{3}}^{1} x^{2} dx$$

$$= \left(x \ge \frac{1}{3}\right) = \int_{\frac{1}{3}}^{1} (2x - x^{2}) dx$$

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