首页 Q

# 概率论与数理统计

首页 任务 资料 通知 作业 考试 PBL

姓名: Hollow Man 班级: 班级6 成绩: 88分

Hollow Man

- **一.简答题** (共5题,100.0分)
  - ¶ 概率密度函数1.docx

### 正确答案:

₩概率密度函数1答案.docx

#### 我的答案:

(1) 
$$\int_{-\infty}^{+\infty} f(x) dx = \int_{-1}^{-1} k(x+1) dx = 1$$

$$\int_{-1}^{-1} k(x+1) dx = k(\frac{3}{2} + x) \Big|_{-1}^{-1} = k(\frac{3}{2} + \frac{1}{2}) = 1$$

$$\therefore k = \frac{1}{2}$$
(2)  $P(x > 0) = \int_{0}^{+\infty} f(x) dx = \int_{0}^{-1} \frac{1}{2} (x+1) dx = \frac{3}{4}$ 
(3)  $F(x) = \int_{-\infty}^{x} f(x) dx$ 

$$\frac{1}{2} x = -1 \text{ add } F(x) = 0$$

$$\frac{1}{2} -(-\infty)x = 1 \text{ add } F(x) = 0$$

$$\frac{1}{2} -(-\infty)x = 1 \text{ add } F(x) = 1$$

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$$\frac{1}{2$$

等级: A

- 2 某人上班路上所需的时间X~N(30,100)(单位: min),已知上班时间是8:30,他每
  - 天7:50出门,求:
  - (1) 某天迟到的概率;
  - (2) 一周 (以5天计) 最多迟到一次的概率.

## 正确答案:

(1)0.1587 (2)0.819

## 我的答案:

等级: A

某地区18岁的女青年的血压服从正态分布N(110,12<sup>2</sup>). 在该地区随机地选一女青年,测量她的血压X,求  $(1)P\{X \le 105\}, P\{100 < X \le 120\};$ (2)确定最小的x, 使P{X>x}≤0.05.

正确答案:

(1)0.3383,0.5952 (2)129.74

我的答案:

$$(.) P(x \le | \circ S = \overline{\Phi}(\frac{| \circ S - 1 | \circ}{| \circ Z}) \stackrel{\sim}{\sim} \overline{\Phi}(-0.42) = 0.337 |$$

$$P(| \circ \circ (x \le | \circ S) = \overline{\Phi}(\frac{| \circ S - 1 | \circ}{| \circ Z}) - \overline{\Phi}(\frac{| \circ S - 1 | \circ}{| \circ Z - 1 | \circ}) \stackrel{\sim}{\sim} \overline{\Phi}(0.83) - \overline{\Phi}(-0.83) \stackrel{\sim}{\sim} 0.5934$$

$$(2) P(x > x) = | -\overline{\Phi}(\frac{x - 1 | \circ}{| \circ Z - 1 | \circ}) < 0.05$$

$$\frac{x - 1 | \circ}{| \circ Z - 1 | \circ} > 1.645$$

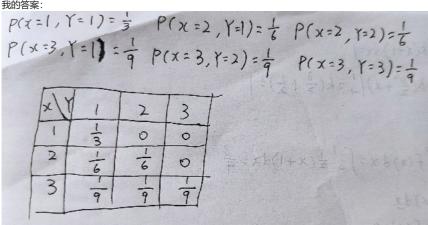
$$x = 129.74$$

等级: A

4 从1, 2, 3三个数字中随机地取一个,记所取的数为X,再从1到X的整数中随机地取一个,记为Y,试求(X, Y)的联合分布 列。

#### 正确答案:

■答案2.docx



等级: E

5 箱子中装有10件产品,其中2件是次品,每次从箱子中任販一件产品.共取2次.定

义随机变量X, Y如下:

$$X = \left\{ egin{array}{ll} 0, & ext{ 若第一次取出正品} \\ 1, & ext{ 若第一次取出次品,} \end{array} 
ight. Y = \left\{ egin{array}{ll} 0, & ext{ 茬第二次取出正品} \\ 1, & ext{ 茬第二次取出次品,} \end{array} 
ight.$$

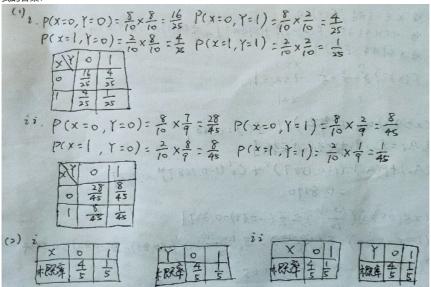
分别就下面两种情况(i)放回抽(ii)不放回抽样求:

- (1)二维随机变量(X, Y)的联合分布律;
- (2)关于X及关于Y的边缘分布律;

## 正确答案:

- $(1)(i)P(X=0,\ Y=0)=16/25; P(X=0,\ Y=1)=4/25; P(X=1,\ Y=0)=4/25; P(X=1,\ Y=1)=1/25; P(X=1,\ Y=0)=4/25; P(X=1,\ Y=0)=1/25; P(X=$ (ii)P(X=0, Y=0)=28/45; P(X=0, Y=1)=8/45; P(X=1, Y=0)=8/25; P(X=1, Y=1)=1/45; P(X=0, Y=0)=8/25; P(X=1, Y=0)=8/25; P(X=1
- (2)(i) P(X=0)=4/5; P(X=1)=1/5; P(Y=0)=4/5; P(Y=1)=1/5;
  - (ii) P(X=0)=4/5; P(X=1)=1/5; P(Y=0)=4/5; P(Y=1)=1/5;

我的答案:



等级: A

1. 设随机变量 X 的概率密度函数为

$$f(x) = \begin{cases} k(x+1), & -1 < x < 1, \\ 0, & \sharp : \Xi. \end{cases}$$

- 求(1)求知参数k;
  - (2) 概率 P(X>0);
  - (3) 写出随机变量 X 的分布函数.

解: 由1 = 
$$\int_{-1}^{1} k(x+1)dx = k\left(\frac{1}{2}x^2 + x\right)_{-1}^{1} = 2k$$
, 得 $k = \frac{1}{2}$ ;
$$P(X > 0) = \int_{0}^{1} \frac{1}{2}(x+1)dx = \frac{1}{2}\left(\frac{1}{2}x^2 + x\right)_{0}^{1} = \frac{3}{4}$$
;
$$F(X) = \begin{cases} 0, & x \le -1, \\ \frac{1}{4}(x+1)^2, & -1 < x < 1, \\ 1, & x \ge 1. \end{cases}$$

# 4答案

26.解:X,Y的可能取值为1,2,3.

$$P \mid X = i, Y = j \mid = 0, 1 \le i < j \le 3.$$

$$P[X=1, Y=1] = P[X=1]P[Y=1|X=1] = \frac{1}{3}$$

$$P[X=2, Y=1] = P[X=2]P[Y=1]X=2] = \frac{1}{6}.$$

$$P \mid X = 2, Y = 2 \mid = P \mid X = 2 \mid P \mid Y = 2 \mid X = 2 \mid = \frac{1}{6}$$

类似可得

$$P[X=3, Y=1] = \frac{1}{9}$$

$$P \mid X = 3, Y = 2 \mid = \frac{1}{9},$$

$$P[X=3, Y=3] = \frac{1}{9}$$