

《SE-203 概率统计》期末试题答案(B)

1.

6	34	stem=ones
7	17	leaf=tenths
8	4589	
9	1	
10	12667789	
11	122499	
12	2	
13	1	

$\bar{x} = 9.9556, \tilde{x} = 10.6$   
 $s = 1.7594$   
 $n = 27$   
 $f_s = 2.3$                       lower fourth = 8.85, upper fourth = 11.15

2.

(a)  $1 - \frac{\binom{22}{6}}{\binom{30}{6}}$

(b)  $\frac{\binom{10}{2}\binom{12}{4}}{\binom{22}{6}}$

3. 0.49

4. 11/243

5.

$$P\left\{Z > \frac{x-40}{7}\right\} = 0.05$$

$$\frac{x-40}{7} = 1.645$$

$$x = 51.515$$

you should leave no later than 8.485 minutes after 12P.M.

6.

$$\begin{aligned} 1 &= \int_0^1 \int_1^5 (x/5 + cy) dy dx \\ &= \int_0^1 (4x/5 + 12c) dx \\ &= 12c + 2/5 \end{aligned}$$

Hence,  $c = 1/20$ .

(b) No, the density does not factor.

(c)

$$\begin{aligned} P\{X + Y > 3\} &= \int_0^1 \int_{3-x}^5 (x/5 + y/20) dy dx \\ &= \int_0^1 [(2+x)x/5 + 25/40 - (3-x)^2/40] dx \\ &= 1/5 + 1/15 + 5/8 - 19/120 = 11/15 \end{aligned}$$

7.

$$(a) \hat{\theta} = \frac{\bar{X}}{1 - \bar{X}}$$

$$(b) \hat{\theta} = \frac{n}{\sum_{i=1}^n \ln X_i}$$

8

$n = 46$ ,  $\bar{x} = 382.1$ ,  $s = 31.5$ ; The 95% upper confidence bound =

$$\bar{x} + z_{\alpha} \frac{s}{\sqrt{n}} = 382.1 + 1.645 \frac{31.5}{\sqrt{46}} = 382.1 + 7.64 = 389.74$$