Statistics (I) Quiz 1-Date: October-16-20117

姓名：

學號：

1. Find the probabilities for each, using the standard normal distribution. (§6-1,#35,34,p.323)

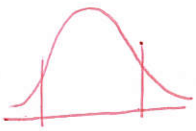
   a. $P(-2.07 < z < 1.88)$

   16

   = 0.9507

   3 + 1

   4% for each

   c. $P(|z| > 0.53)$

   0.5962

   b. $P(1.56 < z < 2.13)$

   0.0428

   d. $P(|z| < 0.75)$

   0.5468

2. Find two z values, one positive and one negative, that are equidistant from the mean so that the areas in the two tails add to the following values. (§6-1,#49,p.324)

   a. 5%

   10

   ~~01~~ + 4%

   2

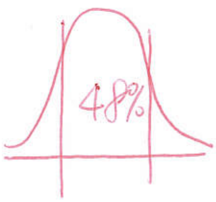
   ±1.96

   2% x 2.

   b. 1%

   ±2.58

3. Find two *z* values so that 48% of the middle area is bounded by them. (§6-1,#50,p.324)

   6 5 1

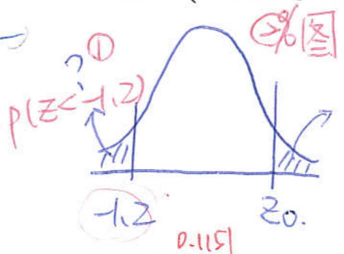
   2 + 4%

   z = ±0.64

4. Find z_0 such that. (§6-1,#53 &54,p.324)

   10

   a. $P(-1.2 < z < z_0) = 0.8671$

   ②%图

   2.1

   p(·z

   ③% z_0 = ?

   b. $P(z_0 < z < 2.5) = 0.7672.$

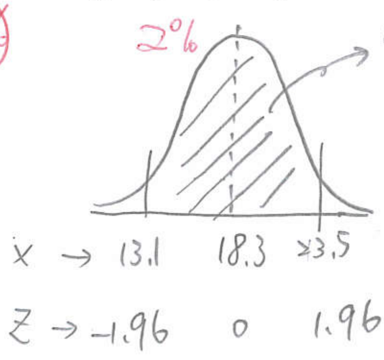
   0.9938

   -0.75

5. U.S. internet user spend an average of 18.3 hours a week online. If 95% of users spend between 13.1 and 23.5 hours a week, what is the probability that a randomly selected user is online less than 15 hours a week? (§6-2,#37,p.340)

   8%

   2%

   $P(13.1 < X < 23.5) = 0.95$

   2% $\begin{cases} 13.1 = 18.3 - 1.96\sigma \\ 23.5 = 18.3 + 1.96\cdot\sigma \end{cases}$

   $\Rightarrow \sigma = 2.65$

   2%

   2%

   $P(X < 15)$

   $= P(Z < -1.05)$

   $= 0.1056$

6. The average price of a personal computer (PC) is $28500. If the computer prices are approximately normally distributed and σ= $4000.
   a. What is the probability that a randomly selected PC costs more than ~~$40000~~? 39500
   b. What is the probability that a randomly selected PC costs between $25~~0~~5 00 and ~~$38500~~? 31500
   c. The least expensive 10% of personal computer cost less than what amount? (§6-2,#21,p.339)

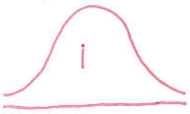
(7) d ______ 16. ______

5% x4

a. $p(X > 39500)$ 1

$= p(Z > 2.75)$ .1

(4) $= 0.003$ 2.



c. $P(X < a) = 0.1 \Rightarrow P(Z < Z_0) = 0.1$

$Z_0 = ?\ -1.28$

$a = X - Z_0 \times \sigma$

$= 28500 - 1.28 \times 4000 = 23380$

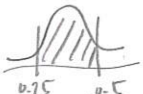
70

b. $P(25500 < X < 30500)$

$= P(-0.75 < Z < 0.5) = 0.4649$

0.6915 - 0.2266

= 0.4649



d. $P(25500 < \bar{X} < 30500)$

$= P(-3\ \ Z < 2)$

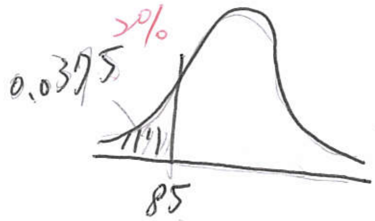
$= 0.9759$

0.9772 - 0.0013 = 0.9759

7. In a normal distribution, find μ when σ is 8 and 3.75% of the area lies to the left of 85. (§6-2,#36,p.340)

2

10



Z=-1.78

2% $Z = -1.78$

3% $3.75 = P(X < 85)$

3% $\Rightarrow X = 85 + 1.78 \times 8$

$= 99.24$

8. An instructor gives a 100-point examination in which the grades are normally distributed. The mean is 75 and the standard deviation is 8. If there are 5.05% A's and ~~5.05~~%F's, 15%B's and 15%D's, and 60%C's, find the scores that divide the distribution into those categories. (§6-2,#38,p.340)

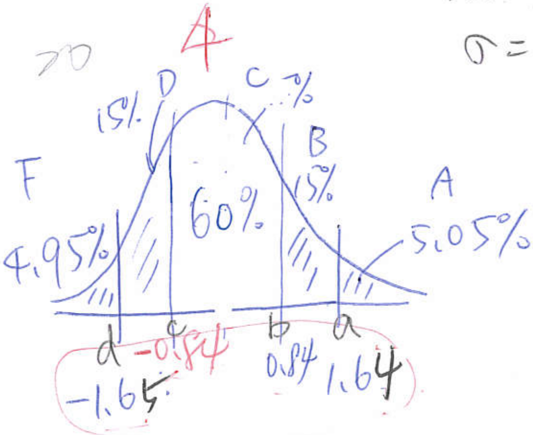
4.95

4

$\mu = 75$

$\sigma = 8$

70



$a = 75 + 1.64 \times 8$

$= 88.12$

3% x4

$b = 75 + 0.84 \times 8$

$= 81.72$

$c = 75 - 0.84 \times 8$

$= 68.28$

$d = 75 - 1.65 \times 8$

$= 61.8$

A: (88.2 以上

B: (81.72, 88.12)

C: (68.28, 81.72)

4%

D: (61.8, 68.28)

F: (61.8 以下)