給定一組資料如下，並另 $\alpha = 0.05$，試問下組資料是否為常態分配。

9.42	8.69	8.93	8.27	8.82	8.66	8.90	8.31	9.15	9.63
9.41	8.56	8.82	8.58	8.43	8.05	8.56	8.55	8.88	8.73
8.29	8.79	8.51	8.85	9.34	9.21	8.38	8.51	8.41	8.98
8.58	9.21	8.27	8.76	9.26	8.59	8.36	8.71	8.51	8.88
9.20	8.24	8.57	8.85	8.69	8.85	9.08	9.40	9.25	8.79

$H_0 : X \sim N(\mu, \sigma^2)$

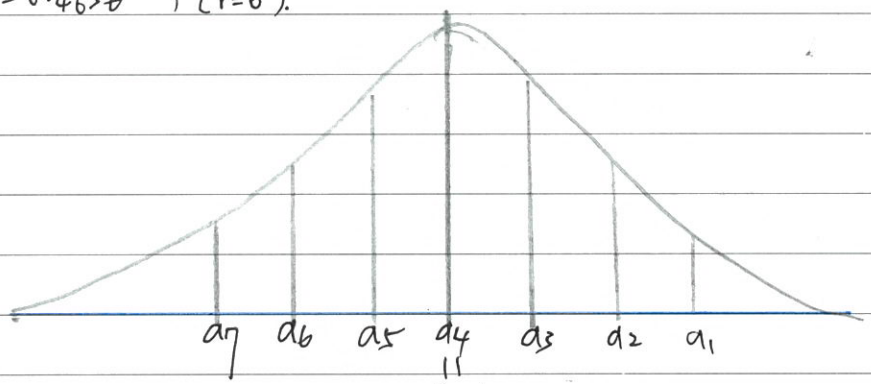
$H_1 : X \not\sim N(\mu, \sigma^2)$

$$\bar{x} = \frac{9.42 + 8.69 + 8.93 + 8.27 + \cdots 8.79}{50} = \frac{438.67}{50} = 8.7734$$

$$s^2 = \frac{1}{50-1}\left[(9.42)^2 + (8.69)^2 + (8.93)^2 \cdots (8.79)^2 - 50 \times (8.7734)^2\right] = \frac{1}{49} \times 10.5355 = 0.2150$$

$s = \sqrt{0.2150} = 0.4636$ ，$(\gamma = 0)$.

令 $k = 8$



期望值 $= \bar{x}$

$= 8.7734$

$P(X > a_1) = 1/8 = 0.125$

$P\left(Z > \frac{a_1 - 8.7734}{0.4636}\right) = 0.125$

$\frac{a_1 - 8.7734}{0.4636} = 1.15$, $a_1 = 9.30654$

$P(X > a_2) = 2/8 = 0.25$

$P\left(Z > \frac{a_2 - 8.7734}{0.4636}\right) = 0.25$

$\frac{a_2 - 8.7734}{0.4636} = 0.675$, $a_2 = 9.08633$

$P(X > a_3) = 3/8 = 0.375$

$P\left(Z > \frac{a_3 - 8.7734}{0.4636}\right) = 0.375$

$\frac{a_3 - 8.7734}{0.4636} = 0.32$ / $a_3 = 8.9217$

$a_5 = 2 \times a_4 - a_3 = 2 \times 8.7734 - 8.9217 = 8.6251$

$a_6 = 2 \times a_5 - a_4 = 2 \times 8.6251 - 8.7734 = 8.4768$

$a_7 = 2 \times a_6 - a_5 = 2 \times 8.4768 - 8.6251 = 8.3285$

分組	O_i	$e_i = np_i = 50 \times \frac{1}{8}$	$[O_i - e_i]^2$
8.3285 以下	6	6.25	0.0625
8.3285 ~ 8.4768	4	6.25	5.0625
8.4768 ~ 8.6251	9	6.25	10.5625
8.6251 ~ 8.7734	7	6.25	1.5625
8.7734 ~ 8.9217	10	6.25	14.0625
8.9217 ~ 9.0863	2	6.25	18.0625
9.0863 ~ 9.3065	7	6.25	1.5625
9.3065 以上	5	6.25	1.5625

拒絕 H_0，if $\sum_{i=1}^{k} \frac{(O_i - e_i)^2}{e_i} > \chi^2_\alpha (k-1-r)$.

$=$

$\frac{0.0625+5.0625+10.5625+1.5625+14.0625+18.0625+1.5625+1.5625}{6.25}$

$= 52.5 / 6.25 = 8.4$

$\leq$

$\chi^2_{0.05}(7)$

$=$ (查表)

14.07

在 $\alpha = 0.05$ 下，不拒絕 H_0

由資料顯示，此組數據為常態分配.