中國文化大學八十七學年度碩士班入學考試

所(組)別：觀光事業研究所　　考試科目：微積分

一、求 $y=(x^2+4)^3(3x-2)^7$ 之導數 (10%)

二、設 $x^3+2xy+3y^2=1$，求 $\frac{dy}{dx}$ 及 $\frac{d^2y}{dx^2}$ (10%)

三、以直尺量一圓之直徑為 6.4 吋，若量度之可能誤差為 0.05 吋，則計算圓面積之最大誤差為何？(10%)

四、試求曲線 $x=t^2-2t$，$y=1-t^2$ 之垂直切線之切點 (10%)

五、某旅行社估計每週代客機位 x 個之成本以元計為

$C(x)=x^3-3x^2-80x+500$

每個機位之售價為 2800 元，試問每週代客機位若干個可使利潤最大？又最大利潤為何？(10%)

六、Evaluate $\int_0^{\infty}\int_0^1 ye^{y^2-x}\,dy\,dx$. (10%)

七、Determine the convergence or divergence of (10%)

$$\int_{-\infty}^{0}(x+1)e^x\,dx.$$

八、Suppose a company has a monthly revenue function $R(t)=4t^2e^{-t/2}+50$. (R in thousands and t is in months.) What is the average monthly revenue during the first quarter, $0\le t\le 4$?

(15%)

九、If the time required for a person to learn to use a new computer software program, is described by the probability density function

$$f(t)=\frac{15}{128}t\sqrt{4-t},\ [0,\ 4]$$

find the probability that a person will learn to use the program in less than three hours.

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一、**Three coins, one dollar, half-dollar and quarter, are tossed once.(25%)**

(1)Describe the sample space Ω. (5%)

(2)If the coins are fair, what will be the probabilities associated with each point of Ω? (5%)

Suppose that the rules of the game are that you win every coin that falls " heads". We define X to be a random variable representing your total winnings in cents.

(Note : one dollar = 100 cents, half-dollar = 50 cents, quarter = 25 cents)

(3)Exhibit the relationship between X and the points of Ω. (5%)

(4)Find the probability density function of X, and identify it as one of our standard distributions.(10%)

二、**A coin is tossed 200 times, and "heads" shows 116 times. Define p to be the unknown probability of appearing "heads".(25%)**

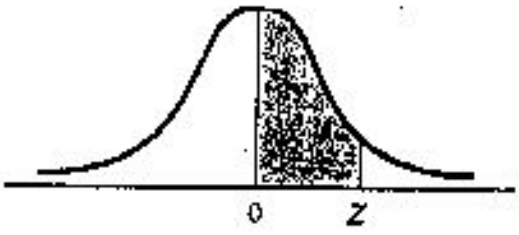
(1)Construct a 95% confidence interval for p. (5%)

If you believe this coin is fair,

(2)State the null and the alternative hypotheses that you would choose for a statistical test. (5%)

(3)Conduct the test and state your conclusions. (α=0.05) (10%)

(4)Find the p-value for the above test. (5%)



Entry represents area under the standardized normal distribution from the mean to Z

Z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549
0.7	.2580	.2612	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3666	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4606	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.49865	.49869	.49874	.49878	.49882	.49886	.49889	.49893	.49897	.49900
3.1	.49903	.49906	.49910	.49913	.49916	.49918	.49921	.49924	.49926	.49929
3.2	.49931	.49934	.49936	.49938	.49940	.49942	.49944	.49946	.49948	.49950
3.3	.49952	.49953	.49955	.49957	.49958	.49960	.49961	.49962	.49964	.49966
3.4	.49966	.49968	.49969	.49970	.49971	.49972	.49973	.49974	.49975	.49976
3.5	.49977	.49978	.49978	.49979	.49980	.49981	.49981	.49982	.49983	.49983
3.6	.49984	.49985	.49985	.49986	.49986	.49987	.49987	.49988	.49988	.49989
3.7	.49989	.49990	.49990	.49990	.49991	.49991	.49992	.49992	.49992	.49992
3.8	.49993	.49993	.49993	.49994	.49994	.49994	.49994	.49995	.49995	.49995
3.9	.49995	.49995	.49996	.49996	.49996	.49996	.49996	.49996	.49997	.49997

(三)某觀光遊樂區隨機抽取10天之遊客人數(X)與當日營業收入(Y)，求得下列之迴歸分析結果(SAS 結果)

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	1	37.65058	37.65058	19.807	0.0022
Error	8	15.37442	1.92180		
C Total	9	53.02500			

Root MSE	1.38629	R-square	0.7102
Dep Mean	9.05000	Adj R-sq	0.6740
C.V.	15.31805		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	-5.203350	3.24859918	-1.602	0.1479
X (遊客人數)	1	0.235392	0.05325496	4.428	0.0022

6分 (1)寫出迴歸方程式並解釋其意義。

7分 (2)以 $\alpha=0.05$ 檢定遊客人數與當日營業收入是否有線性關係(請列出虛無與對立假設)

(四)以三種不同溫度(A,B,C)保存啤酒 15 瓶，得其可以保存之時限(單位為月)如下表所列：

	溫度 A	溫度 B	溫度 C
時	25	20	16
	24	19	18
	18	31	19
	21	22	21
限	23	20	18
總數	111	102	92
平均數	22.2	20.4	18.4

10分 (1)試建立變異數分析表。

10分 (2)以 $\alpha=0.05$ 檢定不同之溫度下，啤酒之保存時限是否有顯著之差異(請列出虛無與對立假設)

15分(五)某航空公司隨機抽取 18 位旅客，紀錄旅客在機場等候行李之時間(單位為分鐘)如下：

108,88,86,90,66,26,39,55,88,41,54,70,66,88,77,76,73,93，試以 $\alpha=0.01$ 檢定紀錄時間之中位數是否大於 90 分鐘。(請列出虛無與對立假設)

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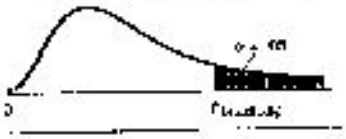
TABLE E.5 Critical Values of F

For a particular combination of numerator and denominator degrees of freedom, entry represents the critical values of F corresponding to a specified upper tail area (α).



Denominator df	Numerator df: 1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞
1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5	241.9	243.9	245.9	248.0	249.1	250.1	251.1	252.2	253.3	254.3
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.41	19.43	19.45	19.45	19.46	19.47	19.48	19.49	19.50
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.36
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.13	2.05	2.01	1.96	1.91	1.86	1.81	1.76
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.15	2.07	1.99	1.95	1.90	1.85	1.80	1.75	1.69
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20	2.13	2.06	1.97	1.93	1.88	1.84	1.79	1.73	1.67
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.12	2.04	1.96	1.91	1.87	1.81	1.77	1.71	1.65
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18	2.10	2.03	1.94	1.90	1.85	1.80	1.75	1.70	1.64
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62
32	4.15	3.31	2.90	2.67	2.51	2.40	2.31	2.24	2.19	2.14	2.07	1.99	1.91	1.86	1.82	1.76	1.71	1.65	1.59
34	4.13	3.28	2.88	2.65	2.49	2.38	2.29	2.23	2.17	2.12	2.05	1.97	1.89	1.84	1.80	1.74	1.69	1.63	1.57
36	4.11	3.26	2.87	2.63	2.48	2.36	2.28	2.21	2.15	2.11	2.03	1.95	1.87	1.82	1.78	1.72	1.67	1.61	1.55
38	4.10	3.25	2.85	2.62	2.46	2.35	2.26	2.19	2.14	2.09	2.02	1.94	1.85	1.81	1.76	1.71	1.65	1.59	1.53
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51
42	4.07	3.22	2.83	2.59	2.44	2.32	2.24	2.17	2.11	2.06	1.99	1.91	1.82	1.78	1.73	1.68	1.62	1.57	1.50
44	4.06	3.21	2.82	2.58	2.43	2.31	2.23	2.16	2.10	2.05	1.98	1.90	1.81	1.76	1.72	1.66	1.61	1.55	1.48
46	4.05	3.20	2.81	2.57	2.42	2.30	2.22	2.15	2.09	2.04	1.97	1.89	1.80	1.75	1.71	1.65	1.60	1.54	1.47
48	4.04	3.19	2.80	2.57	2.41	2.30	2.21	2.14	2.08	2.03	1.96	1.88	1.79	1.74	1.70	1.64	1.59	1.53	1.46
50	4.03	3.18	2.79	2.56	2.40	2.29	2.20	2.13	2.07	2.03	1.95	1.87	1.78	1.74	1.69	1.63	1.58	1.52	1.45
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39
70	3.98	3.13	2.74	2.50	2.35	2.23	2.14	2.07	2.02	1.97	1.89	1.81	1.72	1.67	1.62	1.57	1.50	1.44	1.37
80	3.96	3.11	2.72	2.49	2.33	2.21	2.13	2.06	2.00	1.95	1.88	1.79	1.70	1.65	1.60	1.54	1.48	1.41	1.34
100	3.94	3.09	2.70	2.46	2.31	2.19	2.10	2.03	1.97	1.93	1.85	1.77	1.68	1.63	1.57	1.52	1.45	1.38	1.31
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.24	1.00

TABLE E.10 Lower and Upper Critical Values W of Wilcoxon Signed-Rank Test

n	One Tailed: $\alpha = .25$ / Two Tailed: $\alpha = .50$	$\alpha = .10$ / $\alpha = .20$	$\alpha = .05$ / $\alpha = .10$	$\alpha = .025$ / $\alpha = .05$	$\alpha = .01$ / $\alpha = .02$	$\alpha = .005$ / $\alpha = .01$
	(Lower, Upper)					
5	0, 15	—	—	—	—	—
6	2, 19	0, 21	—	—	—	—
7	3, 25	2, 26	0, 28	—	—	—
8	5, 31	3, 33	1, 35	0, 36	—	—
9	8, 37	5, 40	3, 42	1, 44	—	—
10	10, 45	8, 47	5, 50	3, 52	0, 55	—
11	13, 53	10, 56	7, 59	5, 61	1, 64	—
12	17, 61	13, 65	9, 68	7, 71	2, 74	—
13	21, 70	17, 74	12, 78	9, 81	4, 85	0, 88
14	25, 80	21, 84	15, 89	12, 92	6, 96	2, 99
15	30, 90	25, 95	19, 101*	15, 105*	8, 109	3, 113
16	35, 101	29, 107	23, 113	19, 117	11, 122	5, 126
17	41, 112	34, 119	27, 126	23, 130	14, 135	8, 139
18	47, 124	40, 131	32, 139	27, 144	18, 149	10, 154
19	53, 137	46, 144	37, 153	32, 158	21, 164	13, 169
20	60, 150	52, 158	43, 167	37, 173	25, 179	16, 185

Source: Adapted from Table 2 of F. Wilcoxon and R. A. Wilcox, *Some Rapid Approximate Statistical Procedures* (Pearl River, N.Y.: Lederle Laboratories, 1964), with permission of the American Cyanamid Company.

中國文化大學八十七學年度碩士班入學考試	
所(組)別：觀光事業研究所	考試科目：經濟學

I 名詞解釋

1. Substitution Effect (替代效果) (10分)
2. Pareto Efficiency (10分)

3. 乘數效應 (Multiplier) (7%)

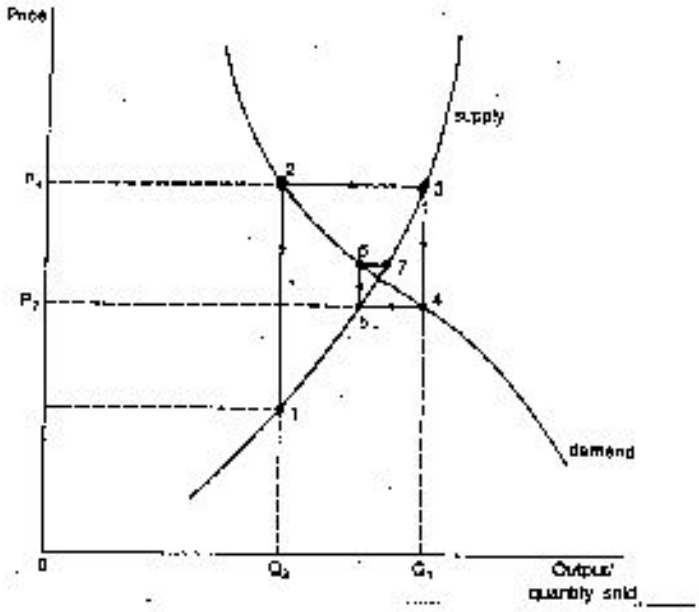
4. 漏卮 (Leakage) (7%)

5. 在外性 (Externality) (7%)

II 簡答題

1. 請說明影響需求量變動(movement along a demand curve)的因子以及影響需求變動(shift of the demand curve)的因子 (10分)

2. 請簡介下圖 (14%)



III 申論題

1. 宜蘭縣的地方人士針對龜山島的開發提出以下三個建議案
   A、高度開發為龜島觀光賭場
   B、中度開發為海域活動休閒渡假的據點
   C、低度開發：僅供保育及生態研究

宜蘭縣政府請你以經濟學的角度來分析三個建議案會對宜蘭縣帶來的經濟效益及影響為何？請說明原則如何來評估？ (20分)

2. 最近臺幣大幅貶值，試問其對臺灣的 Inbound 及 Outbound 旅遊有何影響。請申論之。(15%)