SULIT

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENGAJIAN TINGGI

JABATAN PERDAGANGAN

PEPERIKSAAN AKHIR

SESI I : 2022 / 2023

DPB20053 : BUSINESS MATHEMATICS

TARIKH : 28 DISEMBER 2022
MASA : 02.30 PM – 04.30 PM (2 JAM)

Kertas ini mengandungi **SEPULUH (10)** halaman bercetak.

Struktur (4 soalan)

Dokumen sokongan yang disertakan : Formula dan Jadual PVIF

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

INSTRUCTION:

This section consists of **FOUR (4)** structured questions. Answer ALL questions.

ARAHAN:

*Bahagian ini mengandungi **EMPAT (4)** soalan struktur. Jawab SEMUA soalan.*

QUESTION 1

SOALAN 1

CLO1 C1

(a) Identify the value of x.

Kenalpasti nilai x

(i) $\frac{5x - 2}{2} = \frac{3.5x + 1}{3}$

[3.5 marks]
[3.5 markah]

(ii) $2(x + 5) = 16$

[2.5 marks]
[2.5 markah]

(iii) $2y - 2 - 5y = 10 - 2(y - 4)$

[4 marks]
[4 markah]

CLO1 C2

(b) (i) Interpret the following question into quadratic equation using the factoring method;

Terjemahkan soalan berikut ke dalam bentuk persamaan kuadratik menggunakan kaedah pemfaktoran;

$$x^2 - 4 = -3x$$

[5 marks]
[5 markah]

CLO1
C2

(ii) Detail the value of x for the third-degree equation below:
Perincikan nilai x bagi persamaan darjah ketiga di bawah:

$$2p + 6q + 3r = 10$$
$$6p + 6q + 5r = 50$$
$$7p + 12q + 7r = 60$$

[6 marks]
[6 markah]

CLO1
C2

(iii) Detail the value of x for the second-degree equation below:
Perincikan nilai x bagi persamaan darjah kedua di bawah:

$$3x + 4y = 7$$
$$3x - 4y = -1$$

[4 marks]
[4 markah]

QUESTION 2

SOALAN 2

Apolhoo Sdn. Bhd launched a new food product named Yaho Yah. The selling price of the product is RM 8.00 per pack. The variable costs and fixed costs of the product are RM 3.00 per pack and RM 10,000 respectively. Below is the table for graphs of the break-even point for Apolhoo Sdn. Bhd.

Apolhoo Sdn.Bhd melancarkan produk makanan baharu bernama Yaho Yah. Harga jualan produk ialah RM 8.00 setiap pek. Kos berubah dan kos tetap produk adalah RM 3.00 setiap pek dan RM 10,000 masing-masing. Jadual di bawah merupakan graf titik pulang modal bagi Apolhoo Sdn. Bhd.

Axis / *Paksi* (x)	0	1,000	2,000	3,000	4,000
Axis / *Paksi* (y)					
Fixed Cost (FC) / *Kos Tetap*	10,000	10,000	10,000	10,000	10,000
Total Variable Cost (TVC) / *Jumlah Kos Berubah*					
Total Cost (TC) / *Jumlah Kos*	10,000	13,000	16,000	19,000	22,000
Total Revenue (TR) / *Jumlah Hasil*					

CLO1
C1

You as a manager at the company, are requested to help the company to:
Anda sebagai pengurus di syarikat tersebut, diminta untuk membantu syarikat untuk:

(a) (i) Fulfill the Break-even Point (BEP) table above with the value of total variable cost (TVC) and total revenue (TR).
Lengkapkan jadual Titik Pulang Modal (TPM) di atas dengan nilai jumlah kos berubah dan jumlah hasil.

[3 marks]
[3 markah]

(ii) Define contribution margin and contribution margin ratio.
Tentukan nisbah margin dan nisbah margin sumbangan.

[5 marks]
[5 markah]

CLO1 C2

(b) (i) Simplify the function below using the suitable rule.
Permudahkan fungsi di bawah dengan menggunakan peraturan yang sesuai.

$$f(x) = (4x - 4)^3$$

[5 marks]
[5 markah]

(ii) Interpret the critical points for the function below.
Tafsirkan titik kritikal bagi fungsi di bawah.

$$y(x) = x^4 - 3x^3 - 9x - 7$$

[3 marks]
[3 markah]

CLO1 C3

(c) The demand for an item produced by Jalanda is given by $p + 0.4x = 200$ with p is the price per unit and x is the quantity demanded. The total cost, C(x) of producing x units of the item is given by $C(x) = 800 + 30x$ with x as the level of output. Calculate:

Permintaan terhadap item yang dikeluarkan oleh Jalanda ialah $p + 0.4x = 200$ dengan p adalah harga per unit dan x ialah kuantiti yang diminta. Jumlah kos, C(x) menghasilkan x unit item diberikan adalah $C(x) = 800 + 30x$ dengan x ialah tahap keluaran. Kira:

(i) Total profit functions.
Fungsi jumlah untung.

[5 marks]
[5 markah]

(ii) The level of production in a unit which will maximize the profit.
Tahap pengeluaran dalam unit yang dapat memaksimumkan keuntungan.

[4 marks]
[4 markah]

QUESTION 3
SOALAN 3

CLO2 C1 (a) Identify the number of days from 18 April to 13 October of the same year using the 'approximate time' method.
Kenalpasti bilangan hari dari 18 April hingga 13 Oktober dalam tahun yang sama menggunakan kaedah 'approximate time'.

[5 marks]
[5 markah]

CLO2 C2 (b) Kenanga wants to buy a new car worth RM 95,000. She has to pay 10% as a down payment and the remaining will be borrowed from a bank that charges an interest rate of 3.5% per year for 9 years. Please find the:

Kenanga ingin membeli kereta baru bernilai RM 95,000. Dia perlu membayar 10% sebagai bayaran pendahuluan dan bakinya akan dipinjam daripada bank yang mengenakan kadar faedah 3.5% setahun selama 9 tahun. Cari:

(i) Value of the down payment
Nilai bayaran pendahuluan

[1.5 marks]
[1.5 markah]

(ii) Loan amount
Jumlah pinjaman

[1.5 marks]
[1.5 markah]

(iii) Total interest charged
Jumlah faedah yang dikenakan

[2 marks]
[2 markah]

(iv) Monthly payment
Bayaran bulanan

[3 marks]
[3 markah]

CLO2 C3 (c) If Kenanga decides to pay all her debt after the 60th payment, calculate the amount she should pay for an early settlement.
Sekiranya Kenanga ingin membayar semua hutangnya selepas bayaran ke-60, kirakan jumlah yang perlu dibayar untuk penyelesaian awal.

[12 marks]
[12 markah]

QUESTION 4
SOALAN 4

Harry is a financial advisor for one advertising company. The company intends to choose one of two investments which is a printing machine, MM or NN. The expected value for machine MM is RM100,000 but for machine NN, the expected value is RM 130,000. The estimated cash flow for the machines is given as follows:

Harry merupakan penasihat kewangan bagi sebuah syarikat pengiklanan. Syarikat tersebut berhasrat untuk memilih satu daripada dua pelaburan iaitu mesin pencetak MM atau NN. Dianggarkan nilai bagi mesin MM adalah RM100,000 tetapi bagi mesin NN dianggarkan bernilai RM130,000. Anggaran aliran tunai bagi kedua-dua mesin diberikan seperti berikut:

YEAR *TAHUN*	CASH FLOW (RM) *ALIRAN TUNAI (RM)*	
	MACHINE MM *MESIN MM*	MACHINE NN *MESIN NN*
1	50,000	60,000
2	50,000	60,000
3	60,000	60,000
4	30,000	60,000
TOTAL PRESENT VALUE OF CASH FLOW / *JUMLAH NILAI KINI BAGI ALIRAN TUNAI*	152,343	190,188

CLO1
C1

(a) Based on the information given, you are required to identify value for both machines according to the methods below:

Berdasarkan maklumat yang diberikan, anda dikehendaki mengenalpasti nilai bagi kedua-dua mesin mengikut kaedah di bawah:

(i) Payback Period (PP)

Tempoh Bayar Balik

[4 marks]
[4 markah]

(ii) Net Present Value (NPV)

Nilai Kini Bersih

[3 marks]
[3 markah]

(iii) Profitability Index (PI)

Indeks Keuntungan

[3 marks]
[3 markah]

A company manufactures children's products in three different production plants P1, P2 and P3. Each of these production plants can produce 1,500 units per month. The company supplies to four customers, C1, C2, C3 and C4 whom each require 1000, 1,200, 1,300 and 1,000 units per month. Transportation costs from each production plant to each customer are as follows:

Sebuah syarikat mengeluarkan produk kanak-kanak di tiga kilang pengeluaran berbeza P1, P2 dan P3. Setiap kilang pengeluaran ini boleh menghasilkan 1,500 unit sebulan. Syarikat membekalkan kepada empat pelanggan, C1, C2, C3 dan C4 yang masing-masing memerlukan 1,000, 1,200, 1,300 dan 1,000 unit sebulan. Kos pengangkutan dari setiap kilang pengeluaran kepada setiap pelanggan adalah seperti berikut:

Customer /*Pelanggan* / **Production Plant / *Kilang Pengeluaran***	**C1**	**C2**	**C3**	**C4**
P1	30	10	25	20
P2	15	25	30	10
P3	20	30	15	20

Based on the information above, you are required to:
Berdasarkan maklumat di atas, anda perlu:

CLO2 C2

(b) Choose the correct value to build the complete matrix table for transportation.
Pilih nilai yang betul untuk membina jadual matrik pengangkutan yang lengkap.

[5 marks]
[5 markah]

CLO2
C3

(c) Calculate the transportation cost based on:
Kirakan kos pengangkutan berdasarkan:

(i) The North West Corner Method
Kaedah Pepenjuru Barat Laut

[5 marks]
[5 markah]

(ii) The Least Cost Method
Kaedah Kos Minimum

[5 marks]
[5 markah]

END OF QUESTION
SOALAN TAMAT

FORMULA

$$I = Prt$$

$$I = IP - CP$$

$$I = \left[\frac{Pr + Yr}{2}\right] t$$

$$Y = \frac{P}{t}$$

$$S = P + I$$

$$D = Sdt$$

$$H = S - D$$

$$MP = \frac{S}{n}$$

$$DP = Rate\,(\%) \times CP$$

$$S = P\left(1 + \frac{i}{m}\right)^{n.m}$$

$$P = \frac{S}{\left(1 + \frac{i}{m}\right)^{n.m}}$$

$$P = R\left(\frac{1 - \left(1 + \frac{i}{m}\right)^{-n.m}}{\frac{i}{m}}\right) \quad and \quad R = \left(\frac{P\left(\frac{i}{m}\right)}{1 - \left(1 + \frac{i}{m}\right)^{-n.m}}\right)$$

$$S = R\left(\frac{\left(1 + \frac{i}{m}\right)^{n.m} - 1}{\frac{i}{m}}\right) \quad \text{and} \quad R = \left(\frac{S\left(\frac{i}{m}\right)}{\left(1 + \frac{i}{m}\right)^{n.m} - 1}\right)$$

$$IP = DP + (MP \times n) \;@\; DP + S \;@\; DP + P + I$$

$$R = \left[\frac{\sum n}{\sum N}\right] \times I \; and \; \sum n = \left[\frac{n + 1}{2}\right] n \; , \sum N = \left[\frac{N + 1}{2}\right] N$$

$$EP = (n \times MP) - R$$

$$PP = \frac{IO}{ACF}$$

$$PP = T + \frac{IO - \sum ACF_T}{ACF_{T+1}}$$

$$ARR = \frac{Average\ ACF - Depreciation}{IO} x100$$

$$NPV = ACF(PVIFA, k\%, n) - IO$$

$$PI = \frac{PV}{IO}$$

Table A-3 Present Value Interest Factors for One Dollar Discounted at k Percent for n Periods: $PVIF_{k,n} = 1 / (1 + k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561	0.7432	0.6944	0.6504	0.6400	0.5917
3	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575	0.6407	0.5787	0.5245	0.5120	0.4552
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718	0.5523	0.4823	0.4230	0.4096	0.3501
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972	0.4761	0.4019	0.3411	0.3277	0.2693
6	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5346	0.5066	0.4803	0.4556	0.4323	0.4104	0.3349	0.2751	0.2621	0.2072
7	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759	0.3538	0.2791	0.2218	0.2097	0.1594
8	0.9235	0.8535	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4339	0.4039	0.3762	0.3506	0.3269	0.3050	0.2326	0.1789	0.1678	0.1226
9	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843	0.2630	0.1938	0.1443	0.1342	0.0943
10	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3522	0.3220	0.2946	0.2697	0.2472	0.2267	0.1615	0.1164	0.1074	0.0725
11	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.3173	0.2875	0.2607	0.2366	0.2149	0.1954	0.1346	0.0938	0.0859	0.0558
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2858	0.2567	0.2307	0.2076	0.1869	0.1685	0.1122	0.0757	0.0687	0.0429
13	0.8787	0.7730	0.6810	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2575	0.2292	0.2042	0.1821	0.1625	0.1452	0.0935	0.0610	0.0550	0.0330
14	0.8700	0.7579	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2320	0.2046	0.1807	0.1597	0.1413	0.1252	0.0779	0.0492	0.0440	0.0254
15	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.2090	0.1827	0.1599	0.1401	0.1229	0.1079	0.0649	0.0397	0.0352	0.0195
16	0.8528	0.7284	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2519	0.2176	0.1883	0.1631	0.1415	0.1229	0.1069	0.0930	0.0541	0.0320	0.0281	0.0150
17	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1696	0.1456	0.1252	0.1078	0.0929	0.0802	0.0451	0.0258	0.0225	0.0116
18	0.8360	0.7002	0.5874	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1528	0.1300	0.1108	0.0946	0.0808	0.0691	0.0376	0.0208	0.0180	0.0089
19	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1377	0.1161	0.0981	0.0829	0.0703	0.0596	0.0313	0.0168	0.0144	0.0068
20	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240	0.1037	0.0868	0.0728	0.0611	0.0514	0.0261	0.0135	0.0115	0.0053
21	0.8114	0.6598	0.5375	0.4388	0.3589	0.2942	0.2415	0.1987	0.1637	0.1351	0.1117	0.0926	0.0768	0.0638	0.0531	0.0443	0.0217	0.0109	0.0092	0.0040
22	0.8034	0.6468	0.5219	0.4220	0.3418	0.2775	0.2257	0.1839	0.1502	0.1228	0.1007	0.0826	0.0680	0.0560	0.0462	0.0382	0.0181	0.0088	0.0074	0.0031
23	0.7954	0.6342	0.5067	0.4057	0.3256	0.2618	0.2109	0.1703	0.1378	0.1117	0.0907	0.0738	0.0601	0.0491	0.0402	0.0329	0.0151	0.0071	0.0059	0.0024
24	0.7876	0.6217	0.4919	0.3901	0.3101	0.2470	0.1971	0.1577	0.1264	0.1015	0.0817	0.0659	0.0532	0.0431	0.0349	0.0284	0.0126	0.0057	0.0047	0.0018
25	0.7798	0.6095	0.4776	0.3751	0.2953	0.2330	0.1842	0.1460	0.1160	0.0923	0.0736	0.0588	0.0471	0.0378	0.0304	0.0245	0.0105	0.0046	0.0038	0.0014
30	0.7419	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0994	0.0754	0.0573	0.0437	0.0334	0.0256	0.0196	0.0151	0.0116	0.0042	0.0016	0.0012	*
35	0.7059	0.5000	0.3554	0.2534	0.1813	0.1301	0.0937	0.0676	0.0490	0.0356	0.0259	0.0189	0.0139	0.0102	0.0075	0.0055	0.0017	0.0005	*	*
36	0.6989	0.4902	0.3450	0.2437	0.1727	0.1227	0.0875	0.0626	0.0449	0.0323	0.0234	0.0169	0.0123	0.0089	0.0065	0.0048	0.0014	*	*	*
40	0.6717	0.4529	0.3066	0.2083	0.1420	0.0972	0.0668	0.0460	0.0318	0.0221	0.0154	0.0107	0.0075	0.0053	0.0037	0.0026	0.0007	*	*	*
50	0.6080	0.3715	0.2281	0.1407	0.0872	0.0543	0.0339	0.0213	0.0134	0.0085	0.0054	0.0035	0.0022	0.0014	0.0009	0.0006	*	*	*	*

Table A-4 Present Value Interest Factors for a One-Dollar Annuity Discounted at k Percent for n Periods: PVIFA = $[1 - 1/(1 + k)^n] / k$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257	1.6052	1.5278	1.4568	1.4400	1.3609
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832	2.2459	2.1065	1.9813	1.9520	1.8161
4	3.9020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550	2.7982	2.5887	2.4043	2.3616	2.1662
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6959	3.6048	3.5172	3.4331	3.3522	3.2743	2.9906	2.7454	2.6893	2.4356
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845	3.6847	3.3255	3.0205	2.9514	2.6427
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604	4.0386	3.6046	3.2423	3.1611	2.8021
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	5.1461	4.9676	4.7988	4.6389	4.4873	4.3436	3.8372	3.4212	3.3289	2.9247
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065	4.0310	3.5655	3.4631	3.0190
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892	5.6502	5.4262	5.2161	5.0188	4.8332	4.1925	3.6819	3.5705	3.0915
11	10.368	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065	5.9377	5.6869	5.4527	5.2337	5.0286	4.3271	3.7757	3.6564	3.1473
12	11.255	10.575	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924	6.1944	5.9176	5.6603	5.4206	5.1971	4.4392	3.8514	3.7251	3.1903
13	12.134	11.348	10.635	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831	5.3423	4.5327	3.9124	3.7801	3.2233
14	13.004	12.106	11.296	10.563	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9819	6.6282	6.3025	6.0021	5.7245	5.4675	4.6106	3.9616	3.8241	3.2487
15	13.865	12.849	11.938	11.118	10.380	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909	6.8109	6.4624	6.1422	5.8474	5.5755	4.6755	4.0013	3.8593	3.2682
16	14.718	13.578	12.561	11.652	10.838	10.106	9.4466	8.8514	8.3126	7.8237	7.3792	6.9740	6.6039	6.2651	5.9542	5.6685	4.7296	4.0333	3.8874	3.2832
17	15.562	14.292	13.166	12.166	11.274	10.477	9.7632	9.1216	8.5436	8.0216	7.5488	7.1196	6.7291	6.3729	6.0472	5.7487	4.7746	4.0591	3.9099	3.2948
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.3719	8.7556	8.2014	7.7016	7.2497	6.8399	6.4674	6.1280	5.8178	4.8122	4.0799	3.9279	3.3037
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982	5.8775	4.8435	4.0967	3.9424	3.3105
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.8181	9.1285	8.5136	7.9633	7.4694	7.0248	6.6231	6.2593	5.9288	4.8696	4.1103	3.9539	3.3158
21	18.857	17.011	15.415	14.029	12.821	11.764	10.836	10.017	9.2922	8.6487	8.0751	7.5620	7.1016	6.6870	6.3125	5.9731	4.8913	4.1212	3.9631	3.3198
22	19.660	17.658	15.937	14.451	13.163	12.042	11.061	10.201	9.4424	8.7715	8.1757	7.6446	7.1695	6.7429	6.3587	6.0113	4.9094	4.1300	3.9705	3.3230
23	20.456	18.292	16.444	14.857	13.489	12.303	11.272	10.371	9.5802	8.8832	8.2664	7.7184	7.2297	6.7921	6.3988	6.0442	4.9245	4.1371	3.9764	3.3254
24	21.243	18.914	16.936	15.247	13.799	12.550	11.469	10.529	9.7066	8.9847	8.3481	7.7843	7.2829	6.8351	6.4338	6.0726	4.9371	4.1428	3.9811	3.3272
25	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	9.8226	9.0770	8.4217	7.8431	7.3300	6.8729	6.4641	6.0971	4.9476	4.1474	3.9849	3.3286
30	25.808	22.396	19.600	17.292	15.372	13.765	12.409	11.258	10.274	9.4269	8.6938	8.0552	7.4957	7.0027	6.5660	6.1772	4.9789	4.1601	3.9950	3.3321
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.6442	8.8552	8.1755	7.5856	7.0700	6.6166	6.2153	4.9915	4.1644	3.9984	3.3330
36	30.108	25.489	21.832	18.908	16.547	14.621	13.035	11.717	10.612	9.6765	8.8786	8.1924	7.5979	7.0790	6.6231	6.2201	4.9929	4.1649	3.9987	3.3331
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.7791	8.9511	8.2438	7.6344	7.1050	6.6418	6.2335	4.9966	4.1659	3.9995	3.3332
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.9148	9.0417	8.3045	7.6752	7.1327	6.6605	6.2463	4.9995	4.1666	3.9999	3.3333