SULIT

KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

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

JABATAN PERDAGANGAN

PEPERIKSAAN AKHIR

SESI I : 2023/2024

DPB20053: BUSINESS MATHEMATICS

TARIKH : 29 DISEMBER 2023
MASA : 8.30 AM – 10.30 AM (2 JAM)

Kertas ini mengandungi **SEBELAS (11)** halaman bercetak.

Struktur (4 soalan)

Dokumen sokongan yang disertakan : Formula dan Jadual PVIF/PVIFA

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 a) Identify the value of x.

Kenalpasti nilai x.

i) $7x - 3 = 2x + 7$

[3 marks]

[*3 markah*]

ii) $3x - 6x + 8 = 20$

[3 marks]

[*3 markah*]

iii) $x^2 + 4x - 12 = 0$

[4 marks]

[*4 markah*]

CLO1 b) Amal Amna Sdn Bhd produces Batik Shawl Exclusive. The following data was obtained from the company:

Amal Amna Sdn Bhd adalah pengeluar Selendang Batik Eksklusif. Maklumat berikut telah diperolehi daripada syarikat tersebut:

Variable cost / *Kos berubah*: RM55

Fixed Cost / *Kos tetap*: RM50,000

Selling Price / *Harga jualan*: RM80

From the information given, detail the calculation below:
Berdasarkan maklumat yang diberikan, perincikan pengiraan di bawah:

i) The total revenue if 5,000 units of products were sold.
Jumlah hasil jika 5,000 unit telah dijual.

[2 marks]
[*2 markah*]

ii) Number of units that must be sold for the company to earn a profit of RM80,000.
Jumlah unit yang perlu dijual oleh syarikat untuk memperolehi keuntungan sebanyak RM80,000.

[4 marks]
[*4 markah*]

iii) The profit if 10,500 units of the products were sold.
Jumlah keuntungan jika 10,500 unit telah terjual.

[4 marks]
[*4 markah*]

iv) The profit gained if 12,000 units of the products were sold with the fixed cost increased by 5%.
Keuntungan yang diperoleh jika telah menjual 12,000 unit produk dengan kos tetap meningkat sebanyak 5%.

[5 marks]
[*5 markah*]

QUESTION 2

SOALAN 2

CLO1

a) Zuzita Cake Hauz launched a new product. The total cost of producing the product is as below:

Zuzita Cake Hauz telah melancarkan satu produk baru. Jumlah kos untuk pengeluaran produk adalah seperti di bawah:

$$C(x) = 15x + 50{,}000$$

The selling price is RM40 per unit. Based on the information given, state:

Harga jualan adalah RM40 seunit. Berdasarkan maklumat yang diberikan, nyatakan:

i) The variable cost function, VC(x)

Fungsi kos berubah, VC(x)

[1 mark]

[*1 markah*]

ii) The revenue function, R(x)

Fungsi hasil, R(x)

[1 mark]

[1 *markah*]

iii) The profit function, P(x)

Fungsi untung, P(x)

[3 marks]

[3 *markah*]

iv) Break-even point (BEP) in units

Titik Pulang Modal (TPM) dalam unit

[3 marks]

[3 *markah*]

CLO1

b) Given $C(x) = 0.60x^3 + 1{,}000x^2 + 10{,}000$ as a cost function. Detail the calculation below:

Diberi $C(x) = 0.60x^3 + 1{,}000x^2 + 10{,}000$ adalah satu fungsi kos. Perincikan pengiraan di bawah:

i) The marginal cost function

Fungsi kos marginal

[2 marks]

[*2 markah*]

ii) The average cost function

Fungsi kos purata

[3 marks]

[*3 markah*]

CLO1

c) StarShine Sdn. Bhd. sells frozen foods. Given the cost function as $C(x) = 5{,}000 + 5x$ and the revenue function as $R(x) = 35x - 0.03x^2$.

StarShine Sdn. Bhd. menjual makanan sejuk beku. Diberi fungsi kos adalah $C(x) = 5{,}000 + 5x$ dan fungsi hasil adalah $R(x) = 35x - 0.03x^2$.

Compute / *hitung*:

i) The profit function

Fungsi untung

[3 marks]

[*3 markah*]

ii) The level of output that will maximize the profit

Tingkat output yang akan memaksimumkan keuntungan

[3 marks]

[*3 markah*]

iii) The price at the level of maximization
Harga pada tingkat maksimum

[3 marks]
[*3 markah*]

iv) The value of profit at maximum level
Jumlah keuntungan pada tingkat maksimum

[3 marks]
[*3 markah*]

QUESTION 3

SOALAN 3

CLO2 a) Mr. Indra Shah deposited a sum of money from April 6, 2022 to December 15, 2023. Count the number of days using the approximate time.

Encik Indra Shah mendepositkan sejumlah wang sejak 6 April 2022 sehingga 15 Disember 2023. Kirakan bilangan hari menggunakan anggaran masa.

[2 marks]

[*2 markah*]

CLO2 b) Mrs. Cahyani plans to buy a car for RM115,000. She needs to pay a 10% deposit and the rest through a bank loan with an annual interest rate of 4.5% for 7 years. Detail the calculations for:

Puan Cahyani merancang untuk membeli sebuah kereta berharga RM115,000. Dia perlu membayar deposit sebanyak 10% dan selebihnya melalui pinjaman bank dengan bayaran faedah tahunan sebanyak 4.5% bagi tempoh 7 tahun. Perincikan pengiraan bagi:

i) Loan amount

Jumlah pinjaman

[2 marks]

[*2 markah*]

ii) Total interest charged

Jumlah faedah yang dikenakan

[2 marks]

[*2 markah*]

iii) Monthly payment

Bayaran bulanan

[4 marks]

[*4 markah*]

CLO2

c) Aqeel Rayan, a businessman, receives a promissory note of RM35,000 at a 10% interest rate that expires within 60 days. The note is dated April 10, 2022. The note was discounted on May 15, 2022 with a bank charge of 12% discount. Calculate:

Aqeel Rayan, seorang ahli perniagaan menerima satu nota janji sebanyak RM35,000 dengan kadar faedah 10% setahun yang akan tamat dalam tempoh 60 hari. Nota tersebut bertarikh 10 April 2022. Nota tersebut telah didiskaunkan pada 15 Mei 2022 dengan caj bank sebanyak 12% diskaun. Kirakan:

i) The maturity date
Tarikh matang

[3 marks]
[3 *markah*]

ii) The maturity value
Nilai matang nota

[5 marks]
[5 *markah*]

iii) The discount period
Tempoh diskaun

[2 marks]
[2 *markah*]

iv) The discount value
Nilai diskaun

[5 marks]
[5 *markah*]

QUESTION 4

SOALAN 4

CLO2

a) Faris Syahmi is the financial advisor at Musytari Company. He was asked to evaluate two proposed projects (Project A and Project B). The following is the annual cash flow table for both project:

Faris Syahmi merupakan penasihat kewangan bagi Syarikat Musytari. Dia diminta untuk membuat penilaian bagi dua cadangan projek (Projek A and Project B). Berikut adalah jadual aliran tunai tahunan bagi kedua-dua projek:

Year/ *Tahun*	**0**	**1**	**2**	**3**	**4**	**5**
Cash flow, Project A/ *Aliran tunai Projek A* (RM)	(800,000)	-	230,000	250,000	310,000	340,000
Cash Flow, Project B/ *Aliran tunai Projek B* (RM)	(800,000)	180,000	200,000	240,000	260,000	280,000

The total present value for both projects are RM751,227 and RM815,096 respectively.

Jumlah nilai semasa untuk kedua-dua projek masing-masing adalah sebanyak RM751,227 dan RM815,096.

i) Count the Net Present Value for both projects.

Kirakan Nilai Semasa Bersih bagi kedua-dua projek.

[4 marks]

[*4 markah*]

ii) Count the Profitability Index for both projects.

Kirakan Index Keuntungan bagi kedua-dua projek.

[4 marks]

[*4 markah*]

iii) State the best project to be selected. Why?
Nyatakan projek yang terbaik untuk dipilih? Mengapa?

[2 marks]
[*2 markah*]

CLO2 b) Mutiara Alam Sdn Bhd has four (4) factories. Each factory can supply 160 units, 185 units, 115 units and 140 units of product TCX daily. This product will be shipped to three (3) retailers namely A, B and C. The total number of retailers demand is 210 units, 200 units and 190 units respectively.
Mutiara Alam Sdn Bhd mempunyai empat (4) kilang. Setiap kilang boleh membekalkan 160 unit, 185 unit dan 140 unit produk TCX setiap hari. Produk ini akan dihantar kepada TIGA (3) peruncit iaitu A, B dan C. Jumlah permintaan peruncit masing-masing sebanyak 210 unit, 200 unit dan 190 unit.

Based on the information given, fill the transportation matrix below:
Berdasarkan maklumat yang diberi, isi matrik pengangkutan di bawah:

Factory/ ***Kilang*** / **Retailer/** ***Peruncit***	I	II	III	IV	**……...**
A	5	10	6	4	……...
B	8	11	7	3	……...
C	7	9	5	8	……...
……...	……...	……...	……...	……...	……...

[5 marks]
[*5 markah*]

CLO2

c) Puncak Jaya Sdn Bhd has hired FastFurious Transport Service to evaluate the shipping cost. The market research study provided the following data for transportation cost per unit (RM):

Puncak Jaya Sdn Bhd telah mengupah Perkhidmatan Pengangkutan FastFurious untuk menilai kos penghantaran. Kajian penyelidikan pasaran menyediakan data berikut untuk kos pengangkutan seunit dalam (RM):

	Temerloh	**Petaling Jaya**	**Nilai**
Factory I/ ***Kilang I***	32	35	40
Factory II/ ***Kilang II***	28	30	33
Factory III/ ***Kilang III***	35	37	21

Factories I, II and III respectively have stocks of 500, 700 and 600 units. Meanwhile, Temerloh, Petaling Jaya and Nilai demands are 400, 900 and 500 units.

Kilang I, II dan III masing-masing mempunyai stok sebanyak 500, 700 dan 600 unit. Manakala, permintaan Temerloh, Petaling Jaya dan Nilai ialah 400, 900 dan 500 unit.

Based on the information given, calculate transportation cost by using:

Berdasarkan maklumat diberi, kirakan kos pengangkutan menggunakan:

i) Least Cost Method / *Kaedah Kos Minima*

[5 marks]

[*5 markah*]

ii) North - West Corner Rule / *Kaedah Pepenjuru Barat - Laut*

[5 marks]

[*5 markah*]

SOALAN TAMAT

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

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	*	*	*	*

FORMULA BUSINESS MATHEMATICS

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$P = pQ - VCQ - FC$$

$$P = TR - TC$$

$$TC = VCQ + FC$$

$$TR = pQ$$

$$TVC = VCQ$$

$$BEP(Q) = \frac{FC}{p - VC}$$

$$BEP(RM) = BEP(Q)\ x\ \ p$$

$$CM = p - VC$$

$$CMR = \frac{p - VC}{p}\ x\ 100$$

$$\frac{dy}{dx} = nx^{n-1}$$

$$\frac{dy}{dx} = nx^{n-1} + 0$$

$$\frac{dy}{dx} = anx^{n-1}$$

$$\frac{dy}{dx} = anx^{n-1} + bmx^{m-1}$$

$$\frac{dy}{dx} = u\frac{dv}{dx} + v\frac{du}{dx}$$

$$\frac{dy}{dx} = \frac{v\frac{du}{dx} - u\frac{dv}{dx}}{v^2}$$

$$\frac{dy}{dx} = \frac{dy}{du}\ x\ \frac{du}{dx}$$

$$I = Prt$$

$$I = IP - CP$$

$$I = \left(\frac{Pr + Yr}{2}\right)t \quad or \quad I = \frac{\Pr(t+1)}{2}$$

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

$$DP = Rate\ (\%)\ x\ CP$$

$$P = CP - DP + other\ payments$$

$$S = P + I$$

$$S = P(1 + rt)$$

$$D = Sdt$$

$$H = S - D$$

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

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

$$R = \frac{\sum n}{\sum N}\ x\ I \quad and \quad \sum n = (\frac{n+1}{2})n\ , \quad \sum N = (\frac{N+1}{2})N$$

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

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

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

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

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

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

$$PP = T + \frac{IO - \sum CF_T}{CF_{T+1}}$$

$$ARR = \frac{Average\ CF - Dep.}{IO}\ x\ 100$$

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

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