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 II : 2024/2025

DPB20053 : BUSINESS MATHEMATICS

TARIKH : 13 MEI 2025
MASA : 2.30 PETANG - 4.30 PETANG (2 JAM)

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

Struktur (4 soalan)

Dokumen sokongan yang disertakan : PVIF, PVIFA dan Formula Business Mathematics

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JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

INSTRUCTION:

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

ARAHAN:

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

QUESTION 1

SOALAN 1

CLO1 a) Identify the value of:

Kenalpasti nilai:

i. x for the equation $5x - 12 = 2x + 3$

[3 marks]

[*3 markah*]

ii. a, b and c for the equation $2x^2 + 8x = 4$

[3 marks]

[3 *markah*]

CLO 1 b) Bayu Enterprise had launched a new product. The variable cost for 100 units of the product is RM1,500 and the fixed cost of the product is RM20,000. In the first production, it produced 5,000 units with a selling price of RM20.00 per unit. Using the information given, estimate:

Bayu Enterprise telah melancarkan produk baru. Kos berubah untuk 100 unit adalah RM1,500 dan kos tetap untuk produk tersebut adalah RM20 000. Pada pengeluaran yang pertama, mereka berjaya mengeluarkan 5,000 unit dengan harga jualan RM20.00 per unit. Daripada maklumat yang diberikan, kira:

i. The profit gained by Bayu Enterprise if all the new products are sold.

Keuntungan yang diperolehi oleh Bayu Enterprise jika semua produk baru telah dijual.

[3 marks]

[*3 markah*]

ii. The number of units to be sold in order to earn a profit of RM20,000.
Jumlah unit yang boleh dijual untuk mendapatkan keuntungan sebanyak RM20,000.

[3 marks]
[*3 markah*]

iii. The total revenue if, 6,000 units are sold.
Jumlah hasil jika 6,000 unit dijual.

[3 marks]
[3 *markah*]

CLO1 c) The management of Fatamorgana Sdn Bhd. proposed two new investments which can give profit to company. Both investments need fund of RM 60,000 respectively with the cost of capital 12 %. The investments have cash flows as follows;

Pihak pengurusan Fatamorgana Sdn Bhd mencadangkan 2 pelaburan yang mendatangkan keuntungan kepada syarikat. Kedua – dua projek memerlukan modal sebanyak RM60,000 dengan kos modal sebanyak 12%. Aliran tunai untuk pelaburan tersebut adalah seperti di bawah.

Year/ *Tahun*	Cash Flow (RM) / *Aliran wang tunai (RM)*	
	Investment A /*Pelaburan A*	Investment B / *Pelaburan B*
1	14,000	15,000
2	16,000	17,000
3	17,000	18,000
4	20,000	18,500
5	22,000	19,000

As the Financial Manager of the company, you are required to estimate both investments by using Payback Period (PP)

Sebagai Pengurus Kewangan syarikat, anda dikehendaki untuk mengira kedua-dua pelaburan dengan menggunakan kaedah Tempoh Bayar Balik (TBB)

[4 marks]

[4 markah]

CLO1 d) Based on the cash flow table above, calculate Net Present Value (NPV) for both investments.

Berdasarkan jadual aliran wang tunai di atas, kirakan Nilai Kini Bersih (NKB) untuk kedua-dua pelaburan.

[6 marks]

[6 markah]

QUESTION 2

SOALAN 2

CLO1 a) The following data was obtained from the Raudhah Enterprise that produces shawls.

Data berikut diperolehi daripada Raudhah Enterprise yang mengeluarkan selendang.

Fixed cost RM5,000

Kos tetap RM5,000

Variable cost = 30% of the selling price per unit

Kos berubah = 30% daripada harga jualan seunit

Selling price (50 unit) = RM900

Harga jualan (50 unit) = RM900

Based on the data given, you are required to:

Berdasarkan data yang diberikan, anda dikehendaki untuk:

i. Indicate variable cost per unit.
Tentukan kos berubah seunit.

[3 marks]
[*3 markah*]

ii. State the total revenue function.
Nyatakan fungsi bagi jumlah hasil.

[1 mark]
[*1 markah*]

CLO1 b) Given the fixed cost is RM40,000, the variable cost is RM20 and the selling price is RM40. Based on the data, estimate the:
Diberikan kos tetap adalah RM40,000, kos berubah adalah RM20 dan harga jualan adalah RM40. Berdasarkan data, kirakan:

i) Breakeven points in units and ringgit
Titik pulang modal dalam unit dan ringgit

[4 marks]
[*4 markah*]

ii) The profit if the price increased by 20% with quantity sold is 5,000 units.
Untung jika harga meningkat sebanyak 20% dengan kuantiti yang dijual adalah 5,000 unit.

[4 marks]
[*4 markah*]

CLO1 c) Simplify the first and second derivative for the following function.
Permudahkan pembezaan pertama dan kedua untuk fungsi berikut.

$$y(x) = y^{-4} - 9y^{-3} + 8y^{-2} + 12$$

[4 marks]
[*4 markah*]

CLO1 d) The cost and price in ringgit for manufacturing a product are $C(x) = 60x + 10\,000$ and $p = 100 - 0.01x$ respectively. Calculate:
Kos dan harga dalam ringgit untuk pembuatan suatu produk masing-masing diwakili oleh $C(x) = 60x + 10\,000$ and $p = 100 - 0.01x$. *Kirakan:*

i. The profit functions
Fungsi untung

[4 marks]
[*4 markah*]

ii. The total production that will maximize the profit.
Pengeluaran jika keuntungan adalah maksimum.

[*3* marks]
[*3 markah*]

iii. The total cost if x is 1,000 unit
Jumlah kos jika x adalah 1,000 unit

[2 marks]
[*2 markah*]

QUESTION 3
SOALAN 3

CLO 2 a) Identify the number of days from 4th May to 15th July of the same year using the:
Kenalpasti jumlah hari bermula dari tarikh 4 Mei hingga 15 Julai untuk tahun yang sama dengan menggunakan:

i. Exact time
Masa tepat

[3 marks]
[*3 markah*]

ii. Approximate time
Masa anggaran

[3 marks]
[*3 markah*]

CLO 2 b) Hainan plans to replace her old card with a new one that costs RM95,200. The down payment that she can afford is RM17,000. She plans to borrow the rest from the bank. The bank offers the loan that can be settled by the monthly installment of RM1,175 for 90 months. Using the information given, estimate:
Hainan bercadang hendak menggantikan kereta lama dengan yang kereta yang baru bernilai RM95,200. Bayaran pendahuluan yang mampu dibayar adalah RM17,000. Dia bercadang untuk meminjam bakinya daripada bank. Pinjaman tersebut boleh diselesaikan dengan bayaran bulanan sebanyak RM1,175 untuk 90 bulan. Dengan menggunakan maklumat yang diberikan, kirakan:

i) Interest rate charged by the bank
Kadar faedah yang dikenakan oleh bank

[5 marks]
[*5 markah*]

ii) Total interest charged by the bank
Jumlah faedah yang dikenakan oleh bank

[2 marks]
[*2 markah*]

CLO 2 c) Azwa Zahirah wishes to buy a RM87,000 car. She needs to pay 10% as a deposit and the balance will be borrowed from a financial company with an interest rate of 6% annually. The period of a loan is 7 years. You are required to calculate the:
Azwa Zahirah bercadang hendak membeli sebuah kereta yang berharga RM87,000. Dia perlu membayar 10% sebagai deposit dan bakinya akan dipinjam daripada syarikat kewangan dengan kadar faedah 6% setahun. Jangka masa pinjaman adalah 7 tahun. Anda diminta untuk mengira:

i) Monthly payment
Bayaran bulanan

[*3 marks*]
[*3 markah*]

ii) Rebate, if Azwa Zahirah wishes to settle the loan after 40^{th} payment.
Rebat jika Azwa Zahirah berhasrat untuk membayar keseluruhan pinjaman pada pembayaran yang ke 40.

[6 marks]
[*6 markah*]

iii) The outstanding balance
Baki tertunggak

[3 marks]
[*3 markah*]

QUESTION 4

SOALAN 4

CLO 2 a) An investment earns 3% compounded monthly. Indicate the value of initial investment of RM5,000 after 6 years.

Sebuah pelaburan memperolehi 3% dikompaunkan secara bulanan. Tentukan nilai awal pelaburan yang berjumlah RM5,000 selepas 6 tahun.

[4 marks]

[*4 markah*]

CLO2 b) In July 14, Mahsuri accepted a RM60,000, 6% and 160 days promissory note from Orked. On Nov 17, Mahsuri discounted the note at MeBank at 7%. On December 21, the maturity value is RM61,600. Approximate the proceeds.

Pada 14 Julai, Mahsuri menerima RM60,000, 6% dan 160 hari nota janji daripada Orked. Pada 17 Julai, Mahsuri diskaunkan nota tersebut di MeBank pada 7%. Pada 21 Disember, nilai matang adalah RM61,600. Kirakan hasil.

[6 marks]

[*6 markah*]

CLO 2 c) ProOne Company manufactures home deco in two factories and ship them to four distribution centers. The production capacity at each factory and the demand of the distribution are shown in the following table.

Syarikat ProOne menghasilkan dekorasi rumah di dua buah kilang dan dihantar kepada empat buah pusat pengedaran. Kapasiti pengeluaran untuk setiap kilang dan permintaan untuk pengagihan adalah ditunjukkan dalam jadual di bawah.

Factory / Kilang	Capacity / Kapasiti
Courts	150
Empire	100

Distributors / Pengedar	Ikia	Lorenza	Ghabanaz	Fordaa
Capacity / Kapasiti	70	60	90	30

The transportation cost per unit (in RM) from each factory to each distributor is shown in the following table:
Kos pengangkutan seunit (dalam RM) daripada kilang kepada pengedar ditunjukkan dalam jadual berikut:

Distributors / Factory	Ikia	Lorenza	Ghabanaz	Fordaa
Courts	8	7	11	10
Empire	11	8	9	11

You are required to:
Anda dikehendaki untuk:

i. Prepare the initial transportation table based on the above data
Menyediakan jadual permulaan pengangkutan tersebut berdasarkan data di atas.

[5 marks]
[*5 markah*]

ii. Using initial transportation in (i), calculate the transportation cost using the Northwest Corner Rule Method
Berdasarkan jadual permulaan pengangkutan di (i), kirakan kos pengangkutan menggunakan kaedah Penjuru Barat Laut.

[10 marks]
[*10 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

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

$$P = pQ - VCQ - FC$$

$$P = TR - TC$$

$$TC = VCQ + FC$$

$$TR = pQ$$

$$TVC = VCQ$$

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

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

$$CM = p - VC$$

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

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

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

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

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

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

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

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

$$I = Prt$$

$$I = IP - CP$$

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

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

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

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

$$S = P + I$$

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

$$D = Sdt$$

$$H = S - D$$

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

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

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

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

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

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

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

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

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

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

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

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

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