

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 : 2024/2025

DPB20053: BUSINESS MATHEMATICS

TARIKH : 6 DISEMBER 2024

MASA : 3.00 PETANG – 5.00 PETANG (2 JAM)

Kertas ini mengandungi **SEMBILAN (9)** halaman bercetak.

Struktur (4 soalan)

Dokumen sokongan yang disertakan : Formula, Jadual PVIF dan Jadual 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 berstruktur. Jawab semua soalan.*

QUESTION 1**SOALAN 1**

CLO1

- a) Identify the value of variable for the equations below:

Kenalpasti nilai pembolehubah bagi persamaan-persamaan berikut

i. $x - 2 = 3(x + 1)$

[2 marks]

[2 markah]

ii. $6x^2 + x - 2 = 0$

[3 marks]

[3 markah]

iii. $2a + b = 5$
 $-3a + 6b = 0$

[5 marks]

[5 markah]

CLO1

- b) ZXC Sdn Bhd produces furniture product. The following data was obtained from the company.

ZXC mengeluarkan produk perabot. Data berikut diperolehi daripada syarikat.

Variable Cost per unit/ <i>Kos Berubah seunit</i>	= RM1,000
Machine/ <i>Mesin</i>	= RM200,000
Other Fixed Cost/ <i>Lain-lain Kos tetap</i>	= RM400,000
Price per unit/ <i>Harga seunit</i>	= RM5,000

Based on the provided data, you are required to detail out:

Berdasarkan data yang diberikan, anda dikehendaki memperincikan:

- i) Number of furniture to be sold if the company wanted to earn a profit of RM200,000.

Bilangan unit perabot yang perlu dijual sekiranya syarikat mensasarkan keuntungan sebanyak RM200,000.

[3 marks]

[3 markah]

- ii) Total profit or loss gained if the variable cost per unit decreases 10% and selling price increases 15% for the unit sold in (i)

Keuntungan atau kerugian yang diperoleh sekiranya kos berubah seunit berkurangan 10% dan harga jualan meningkat 15% untuk unit jualan (i).

[12 marks]

[12 markah]

QUESTION 2

SOALAN 2

CLO1

- a) Spin Sdn Bhd produces new products for the market in Kuala Kangsar. The selling price is RM40 and the variable cost is RM12 per unit. If the fixed cost for the product is RM40,000, count:

Spin Sdn menghasilkan produk baru untuk pasaran di Kuala Kangsar. Harga jualan adalah RM40 dan kos berubah adalah RM12 seunit. Jika kos tetap produk adalah RM40,000, kira:

- i) The break-even point in units and value

Unit dan nilai titik pulang modal

[6 marks]

[6 markah]

	ii) The contribution margin ratio <i>Ratio margin sumbangan</i> [2 marks] [2 markah]
CLO1	b) Simplify the function $y(x) = \frac{x^4 + 3}{x}$ by using first derivative. <i>Permudahkan fungsi $y(x) = \frac{x^4 + 3}{x}$ dengan menggunakan terbitan pertama.</i> [5 marks] [5 markah]
CLO1	c) The revenue function and cost function of a product for Sesuci Salju Enterprise are $R(x) = 200x - x^2$ and $C(x) = 0.1x^2 + 2x + 600$ respectively. You are required to calculate: <i>Fungsi hasil dan kos produk untuk Sesuci Salju Enterprise ialah $R(x) = 200x - x^2$ dan $C(x) = 0.1x^2 + 2x + 800$. Anda dikehendaki mengira:</i> i) The profit function, $P(x)$ <i>Fungsi keuntungan, $P(x)$</i> [2 marks] [2 markah] ii) The maximum revenue, $R(x)$ <i>Hasil maksimum</i> [5 marks] [5 markah] iii) The increase in cost if the number of product increase from 40 units to 100 units. <i>Peningkatan kos sekiranya bilangan produk meningkat dari 40 unit ke 100 unit.</i> [5 marks] [5 markah]

QUESTION 3

SOALAN 3

CLO2

a)

No. 250203

23rd February 2024

Two months after the above date, I promise to pay Madam Sharifah Ringgit Malaysia: Twenty Thousand Only for the value received with simple interest at the rate of 10% per annum.

Dua bulan selepas tarikh ini, saya berjanji untuk membayar Puan Sharifah Ringgit Malaysia: Dua Puluh Ribu Sahaja bagi nilai yang diterima dengan faedah ringkas 10% setahun.

Kaira
Kaira

Based on the promissory note above, identify:

Berdasarkan nota janji di atas, kenalpasti:

i) The term of the note

Terma nota janji

[1 mark]

[1 markah]

ii) The maturity date of the note

Tarikh matang nota janji

[1 mark]

[1 markah]

- CLO2 b) A refrigerator is costing RM3,200 in cash. It can also be purchased by making an advanced payment of 20% of the price. The remaining payment can be made in monthly installment with an interest of 6% within 18 months. You are required to detail out the calculation for:
- Sebuah peti ais berharga RM3,200 secara tunai boleh dibeli dengan membuat bayaran pendahuluan sebanyak 20% dari harga tersebut. Bayaran selebihnya boleh dibuat secara ansuran bulanan dengan kadar faedah 6% dalam tempoh 18 bulan. Anda dikehendaki perincian pengiraan untuk:*
- i) installment price of the refrigerator under installment scheme
harga ansuran bagi peti ais di bawah skim ansuran
- [5 marks]
[5 markah]
- ii) monthly payment
bayaran bulanan
- [3 marks]
[3 markah]
- CLO2 c) Aisya had deposited RM6,000 into saving account on 30th April 2023 which offers simple interest rate of 3.5% per annum. On 27th November 2023, she withdrew RM600 from the account. Calculate:
- Aisya telah menyimpan RM6,000 ke dalam akaun simpanannya pada 30 April 2023 yang menawarkan kadar faedah ringkas sebanyak 3.5% untuk tempoh setahun. Pada 27 November 2023, beliau telah mengeluarkan RM600 dari akaun tersebut. Kira:*
- i) The exact time and approximate time for the date she deposited the money until the date she withdrew her saving.
Masa tepat dan masa anggaran bagi tempoh dia mula menyimpan wangnya sehingga ke tarikh dia mengeluarkan wangnya.
- [5 marks]
[5 markah]

- ii) The interest received on the date she withdrew her saving using Banker's Rule method.

Faedah yang diterima pada tarikh dia mengeluarkan wangnya dengan menggunakan kaedah Aturan Bank.

[3 marks]

[3 markah]

- iii) The amount of money left in her account after one year of withdrawal.

Jumlah wang yang tinggal di dalam akaun beliau selepas setahun pengeluaran.

[7 marks]

[7 markah]

QUESTION 4

SOALAN 4

- CLO2 a) Serunding Enterprise is considering whether to purchase Alpha Machine or Beta Machine. Both machines are expected to be used for 4 years. The Alpha Machine can generate RM5,000 cash flow in the first year, RM4,000 in Year 2, RM3,000 in Year 3, and RM1,000 in Year 4. Beta Machine can generate RM2,500 in Year 1, RM4,000 in Year 2, RM4,400 in Year 3, and RM6,000 in Year 4. The company's cost of capital is 12% for each machine and the initial investment for both machines is RM12,000. You are required to count:

Serunding Enterprise sedang mempertimbangkan sama ada membeli Mesin Alpha atau Mesin Beta. Kedua-dua mesin dijangka akan digunakan untuk 4 tahun. Mesin Alpha akan menghasilkan aliran tunai RM5,000 dalam tahun pertama, RM4,000 dalam tahun ke-2, RM3,000 dalam tahun ke-3 dan RM1,000 dalam tahun ke-4. Mesin Beta akan menghasilkan aliran tunai RM2,500 dalam tahun pertama, RM4,000 dalam tahun ke-2, RM4,400 dalam tahun ke-3 dan RM6,000 dalam tahun ke-4. Kos modal Syarikat adalah 12% bagi setiap mesin dan pelaburan perulaan adalah RM12,000. Anda dikehendaki untuk mengira:

- i) Payback period (PBP) for each machine

Tempoh bayar balik (TBB) untuk setiap mesin

[5 marks]

[5 markah]

- ii) Average rate of return (ARR) for each machine

Kadar Pulangan Purata (KPK) untuk setiap mesin

[5 marks]

[5 markah]

CLO2

- b) Moonlight Sdn Bhd is a toy manufacturer, which has four warehouses, W1, W2, W3 and W4. Moonlight has just received orders from four regular customers, C1, C2, C3 and C4 for their new toys. Moonlight has decided to sell the toys to all customers at the same price. As for the delivery, Moonlight has appointed a delivery company. The following table shows the transportation cost per unit (RM).

Moonlight Sdn Bhd merupakan sebuah syarikat pengeluar permainan kanak-kanak yang mempunyai empat gudang W1, W2, W3 dan W4. Moonlight baru sahaja menerima tempahan daripada empat pelanggan tetapnya, C1, C2, C3 dan C4. Mainan ini dijual dengan harga yang sama kepada semua pelanggannya. Bagi tujuan penghantaran pesanan tersebut, Moonlight telah melantik sebuah syarikat penghantaran. Jadual berikut menunjukkan kos pengangkutan seunit (RM).

From/Dari	To / ke			
	C1	C2	C3	C4
W1	5	7	9	6
W2	3	2	7	4
W3	6	4	8	5
W4	7	5	6	6

The warehouses at W1, W2, W3 and W4 can supply 350 units, 205 units, 250 units and 400 units respectively. C1, C2, C3 and C4 have a demand of 330 units, 415 units, 165 units and 295 units.

Gudang di W1, W2, W3 dan W4 boleh menawarkan 350 unit, 205 unit, 250 unit dan 400 unit masing-masing. C1, C2, C3 dan C4 mempunyai permintaan sebanyak 330 unit, 415 unit, 165 unit dan 295 unit.

Based on the above information, you are required to visualize the transportation matrix via table.

Berdasarkan maklumat di atas, anda dikehendaki untuk memvisualisasikan jadual matriks pengangkutan.

[5 marks]

[5 markah]

- CLO2 c) Based on the matrix in (b), calculate the transportation cost by using the following method:

Berdasarkan jawapan di (b), kirakan kos pengangkutan dengan kaedah berikut:

- (i) Northwest Corner Rule

Pepenjuru Barat Laut

[5 marks]

[5 markah]

- (ii) Least Cost Method

Kaedah Kos Minimum

[5 marks]

[5 markah]

END OF QUESTIONS

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

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

$$P = pQ - VCQ - FC$$

$$P = TR - TC$$

$$TC = VCQ + FC$$

$$TR = pQ$$

$$TVC = VCQ$$

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

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

$$CM = p - VC$$

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

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

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

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

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

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

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

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

$$I = Prt$$

$$I = IP - CP$$

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

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

$$DP = \text{Rate (\%)} \times CP$$

$$P = CP - DP + \text{other payments}$$

$$S = P + I$$

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

$$D = Sdt$$

$$H = S - D$$

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

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

$$R = \frac{\sum n}{\sum N} \times I \quad \text{and} \quad \sum n = \left(\frac{n+1}{2} \right) n, \quad \sum N = \left(\frac{N+1}{2} \right) N$$

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

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

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

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

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

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

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

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

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

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