STRATHMORE UNIVERSITY BUSINESS SCHOOL
BACHELOR OF FINANCIAL SERVICES
END OF SEMESTER EXAMINATION
AMS 3201: ASSET VALUATION THEORY & TECHNIQUES

Date: 13th December, 2022 **Time:** 2 Hours

INSTRTUCTIONS

- Answer **Question ONE** in **Section A** and **TWO** other Questions in **Section B.**

Section A-COMPULSORY

QUESTION ONE

(a) Shunichi Kobayashi is valuing United Parcel Service. Kobayashi has made the following assumptions:

- Book value per share is estimated at Sh9.62 on 31 December 2017.
- EPS will be 22 percent of the beginning book value per share for the next eight years.
- Cash dividends paid will be 30 percent of EPS.
- At the end of the eight - year period, the market price per share will be three times the book value per share.
- The beta for UPS is 0.60, the risk - free rate is 5.00 percent, and the equity risk premium is 5.50 percent.
- The current market price of UPS is Sh59.38, which indicates a current P/B of 6.2

Required:

(i) Prepare a table that shows the beginning and ending book values, net income, and cash dividends annually for the eight - year period **(6 Marks)**

(ii) Estimate the residual income and the present value of residual income for the eight years. **(4 Marks)**

(iii) Estimate the value per share of UPS stock using the residual income model **(2 Marks)**

(iv) Estimate the value per share of UPS stock using the dividend discount model. **(2 Marks)**

(v) How does this value in (iv) above compare with the estimate from the residual income model? **(1 Mark)**

(b) Explain the following defense tactics against a hostile takeover as used in mergers and acquisitions

i. Pac-man defense **(2 Marks)**
ii. White Knight **(2 Marks)**
iii. Sale of crown jewel **(2 Marks)**

(c) You want to determine the YTM for an issue of outstanding bonds at your firm. Your firm has an issue of 10% annual coupon bonds with 15 years left to maturity. The bonds have a current market value of Sh1,250 and par value of Sh1,000. Estimate the approximate Yield to maturity of the bond **(3 Marks)**

(d) A bond has current par value of Sh1,000 and an annual coupon rate of 4% and current interest rate of 4.5%. The bond has 5 years to maturity. Required:

i. Calculate the Macaulay duration of the bond and interpret your answer **(4 Marks)**
ii. Calculate the modified duration **(2 Marks)**

{TOTAL: 30 MARKS}

SECTION B ANSWER ANY TWO QUESTIONS (40 MARKS)

QUESTION TWO

a) Masomo Ltd is considering acquiring Mawazo Ltd. a firm in the same industry in order to consolidate its market share. Mawazo Ltd has been less profitable, so it has paid an average of only 20% in taxes during the last 10 years. In addition, it has used little debt having a debt ratio of 25%. If the acquisition would be implemented, Masomo Ltd could operate Mawazo Ltd as separate wholly owned subsidiary. This will increase Masomo Ltd's gearing ratio to 30%. The following is a forecasted financial data for Mawazo Lt over the next five years;

Year	**1** **Sh.million**	**2** **Sh. million**	**3** **Sh. million**	**4** **Sh. million**	**5** **Sh.million**
Net Sales	150	160	175	170	165
Operating Costs	10	15	20	25	17
Selling and Admin Costs	15	20	18	19	21
Acceptable investment projects	0.8	0.90	2.60	2.20	1.20

Additional information;

1. The risk free rate of return is 8% and debt is considered to be risk free
2. Expected return of the market portfolio is 13%
3. The firm's levered equity beta after acquisition is estimated at 0.80
4. After 5 years, the net cash flows of Mawazo Ltd increase at a constant rate of 6% per annum in perpetuity.
5. Corporation tax is 30%
6. The firm's gross profit margin is 40%
7. Mawazo Ltd incurs fixed cost of Sh. 2 million per annum
8. The firm's equity shares and bonds are currently trading at par.

Required; Determine the maximum price payable to acquire Mawazo ltd using the discounted free cash flows basis **(10 Marks)**

b) Over the recent past, there has been increased number of mergers and acquisitions. Despite, their popularity, reported failed mergers are still on the rise. Explain ***Four*** Reasons why mergers and acquisitions fail. **(4 Marks)**

c) Biashara Ltd shares are currently trading for Sh24 and have paid a dividend of Sh1 per share for the most recent year. The following information is given:
   - The Risk free rate is 4%
   - The shares have an estimated beta of 1.2
   - The equity risk premium is estimated at 5%

   Required: Based on the above information, determine the constant dividend growth rate that would be required to justify the market price of Sh24. **(4 Marks)**

d) Maji Mazuri Ltd has an estimated beat of 0.2 and the risk free rate of return is 4.5%. The equity risk premium is estimated to be 7.5%. Using the CAPM, calculate the required rate of return for investors in Maji Mazuri Ltd. **(2 Marks)**

{TOTAL: 20 MARKS}

QUESTION THREE

(**a**) Explain ***Three*** Circumstances when Free Cash Flows Valuation Approach is justifiable as a valuation technique. **(3 Marks)**

(**b**) Phillips Ltd Company currently sells for Sh32.50 per share. In an attempt to determine whether Philips' Ltd is fairly priced, an analyst has assembled the following information:

- The before - tax required rates of return on PHB debt, preferred stock, and common stock are, respectively, 7.0 percent, 6.8 percent, and 11.0 percent.
- The company' s target capital structure is 30 percent debt, 15 percent preferred stock, and 55 percent common stock.
- The market value of the company' s debt is Sh. 145 million, and its preferred stock is valued at Sh. 65 million.
- PHB' s Free Cash flows to the Firm (FCFF) for the year just ended is Sh. 28 million. FCFF is expected to grow at a constant rate of 4 percent for the foreseeable future.
- The tax rate is 35 percent.
- PHB has 8 million outstanding common shares.

Required: What is Philip's Ltd estimated value per share? Is PHB' s stock underpriced**?** **(5 Marks)**

(**c**) You have recently been appointed as a junior analyst at "Your Future is Here" Private equity firm. You have been tasked with estimating the dividend growth rate of a client's firm. Explain ***Two*** methods that you can use to estimate the dividend growth rate. (**2 Marks)**

(**d**) Residual income as a valuation technique is one of the most reliable methods that financial analysts use. Despite its popularity, it has a number of weaknesses. Explain ***Three*** weaknesses of residual income as a valuation method. **(3 Marks)**

(e) Jeremy is using economic value added (EVA) and market value added (MVA) to measure the performance of Sundanci. Jeremy uses the following fiscal year 2020 information for his analysis:

- Adjusted net operating profit after tax (NOPAT) is Sh100 million.
- Total capital is Sh700 million (no debt).
- Closing stock price is Sh26
- Total shares outstanding is 84 million.
- The cost of equity is 14%

Required: Calculate the following for Sundanci. Show your work.

(i) EVA for fiscal year 2020. **(2 Marks)**

(ii) MVA as of fiscal year - end 2020. **(2 Marks)**

(**f**) DMH builds prefabricated homes and mobile homes. Favorable demographics and the likelihood of slow, steady increases in market share should enable DMH to maintain its ROE of 15% and growth rate of 10% through time. DMH has a book value of Sh30 per share and the required rate of return on its equity is 12%.

Required: Compute the value of its equity using the single - stage residual income model **(3 Marks)**

{TOTAL: 20 MARKS}

QUESTION FOUR

(**a**) Differentiate between a "Call Option" and a "Put Option" as applied in option derivatives **(3 Marks)**

(**b**) A financial analyst is interested in using the Black-Scholes Model to value call options on a stock.

The following information is available:

- The price of the stock is Sh.35.
- The strike price is Sh.30.
- The option matures in 9 months.
- The volatility of returns of the stock is 0.30.
- The risk-free rate is 10%.

Required: The value of a call option using the Black-Scholes Model. **(5 Marks)**

$$c = P_a N(d_1) - P_e N(d_2) e^{-rt}$$

$$d_1 = \frac{\ln (P_a/P_e) + (r + 0.5s^2)t}{s\sqrt{t}}$$

$$d_2 = d_1 - s\sqrt{t}$$

(c) (i) Great Rift is a public utility holding company that listed its 4.5% cumulative perpetual preferred stock series in March 2012. The par value of the preferred stock is Sh.100. If the required rate of return on this stock is 5.6%, estimate the value of the stock. **(3 Marks)**

(ii) Diwani Ltd recently paid a dividend of Sh1.80 An analyst has examined the financial statements and historical dividend policy of Diwani and expects that the firm's dividend rate will grow at a constant rate of 3.5% indefinitely. The analyst has also determined the beta to be 1.5, the risk free rate is 4%, and the expected return on the market portfolio is 8%.
Required: Calculate the current value of Diwani Ltd's shares. **(3 Marks)**

(iii) The Gordon growth model (GGM) has a number of characteristics that make it useful and appropriate for many applications. However, the model has some characteristics that limits its application. Explain ***Three*** limitations of the GGM **(3 Marks)**

(d) Heri Haki Ltd has issued 5 years' corporate bonds of par value Sh1,000. The coupon rate is 8% and the required rate of return is 10%. **Required:** Calculate the Market Value of the bond and state whether the bond is selling at a premium or a discount. **(3 Marks)**

{TOTAL: 20 MARKS}

QUESTION FIVE

(a) A company has a dividend payout ratio of 80% and the current return on equity is 35%. Calculate the sustainable growth rate of the company **(1 Mark)**

(b) Explain ***three*** assumptions of the Gordon Brown's dividend growth model for valuing equities **(3 Marks)**

(c) (i) Explain the term "Synergy" as used in Mergers and Acquisitions **(2 Marks)**

(ii) Explain ***Four*** types of synergies that arises to a company as a result of a merger **(3 Marks)**

(d) (i) A zero-coupon bond has Sh1,000 face value and a 20-year life. The appropriate discount rate is 10%. Compute the value of the bond. **(2 Marks)**

(ii) Lavender is preparing a valuation of Quick Auto Centre Ltd. She has decided to use a three stage Free Cash Flow to Equity (FCFE) model and the following estimates. The FCFE per share for the current year is Sh0.75 The FCFE is expected to grow at 10% for the next year, then at 26% annually for the following three years, and then 6% in year 5 and thereafter. Lawrence has estimated beta to be 2.00 and the risk-free rate to be 4.5%. The equity risk premium is 5%. Given the above data collected by Lawrence, estimate the value per share of Quick Auto Ltd. **(5 Marks)**

(e) Naikare Baraka (NB) is a family-controlled company that dominates the retail book market. NB has a book value of Sh10 per share, is expected to earn Sh2.00 forever, and pays out all of its earnings as dividends. Its required return on equity is 12.5%.

Required; Calculate the value of the stock of NB using the following:

i. Dividend discount model **(2 Marks)**

ii. Residual income model **(2 Marks)**

{TOTAL: 20 MARKS}

		0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
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	.2517	.2549
0.7	.2580	.2611	.2642	.2673	.2703	.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	.3665	.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	.4430	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.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	.4980	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990

Present Value of 1 Received at the End of n Periods:

$$PVIF_{r,n} = 1/(1+r)^n = (1+r)^{-n}$$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%	16%	18%	20%	24%	28%	32%	36%
1	.9901	.9804	.9709	.9615	.9524	.9434	.9346	.9259	.9174	.9091	.8929	.8772	.8696	.8621	.8475	.8333	.8065	.7813	.7576	.7353
2	.9803	.9612	.9426	.9246	.9070	.8900	.8734	.8573	.8417	.8264	.7972	.7695	.7561	.7432	.7182	.6944	.6504	.6104	.5739	.5407
3	.9706	.9423	.9151	.8890	.8638	.8396	.8163	.7938	.7722	.7513	.7118	.6750	.6575	.6407	.6086	.5787	.5245	.4768	.4348	.3975
4	.9610	.9238	.8885	.8548	.8227	.7921	.7629	.7350	.7084	.6830	.6355	.5921	.5718	.5523	.5158	.4823	.4230	.3725	.3294	.2923
5	.9515	.9057	.8626	.8219	.7835	.7473	.7130	.6806	.6499	.6209	.5674	.5194	.4972	.4761	.4371	.4019	.3411	.2910	.2495	.2149
6	.9420	.8880	.8375	.7903	.7462	.7050	.6663	.6302	.5963	.5645	.5066	.4556	.4323	.4104	.3704	.3349	.2751	.2274	.1890	.1580
7	.9327	.8706	.8131	.7599	.7107	.6651	.6227	.5835	.5470	.5132	.4523	.3996	.3759	.3538	.3139	.2791	.2218	.1776	.1432	.1162
8	.9235	.8535	.7894	.7307	.6768	.6274	.5820	.5403	.5019	.4665	.4039	.3506	.3269	.3050	.2660	.2326	.1789	.1388	.1085	.0854
9	.9143	.8368	.7664	.7026	.6446	.5919	.5439	.5002	.4604	.4241	.3606	.3075	.2843	.2630	.2255	.1938	.1443	.1084	.0822	.0628
10	.9053	.8203	.7441	.6756	.6139	.5584	.5083	.4632	.4224	.3855	.3220	.2697	.2472	.2267	.1911	.1615	.1164	.0847	.0623	.0462
11	.8963	.8043	.7224	.6496	.5847	.5268	.4751	.4289	.3875	.3505	.2875	.2366	.2149	.1954	.1619	.1346	.0938	.0662	.0472	.0340
12	.8874	.7885	.7014	.6246	.5568	.4970	.4440	.3971	.3555	.3186	.2567	.2076	.1869	.1685	.1372	.1122	.0757	.0517	.0357	.0250
13	.8787	.7730	.6810	.6006	.5303	.4688	.4150	.3677	.3262	.2897	.2292	.1821	.1625	.1452	.1163	.0935	.0610	.0404	.0271	.0184
14	.8700	.7579	.6611	.5775	.5051	.4423	.3878	.3405	.2992	.2633	.2046	.1597	.1413	.1252	.0985	.0779	.0492	.0316	.0205	.0135
15	.8613	.7430	.6419	.5553	.4810	.4173	.3624	.3152	.2745	.2394	.1827	.1401	.1229	.1079	.0835	.0649	.0397	.0247	.0155	.0099
16	.8528	.7284	.6232	.5339	.4581	.3936	.3387	.2919	.2519	.2176	.1631	.1229	.1069	.0930	.0708	.0541	.0320	.0193	.0118	.0073
17	.8444	.7142	.6050	.5134	.4363	.3714	.3166	.2703	.2311	.1978	.1456	.1078	.0929	.0802	.0600	.0451	.0258	.0150	.0089	.0054
18	.8360	.7002	.5874	.4936	.4155	.3503	.2959	.2502	.2120	.1799	.1300	.0946	.0808	.0691	.0508	.0376	.0208	.0118	.0068	.0039
19	.8277	.6864	.5703	.4746	.3957	.3305	.2765	.2317	.1945	.1635	.1161	.0829	.0703	.0596	.0431	.0313	.0168	.0092	.0051	.0029
20	.8195	.6730	.5537	.4564	.3769	.3118	.2584	.2145	.1784	.1486	.1037	.0728	.0611	.0514	.0365	.0261	.0135	.0072	.0039	.0021
25	.7798	.6095	.4776	.3751	.2953	.2330	.1842	.1460	.1160	.0923	.0588	.0378	.0304	.0245	.0160	.0105	.0046	.0021	.0010	.0005
30	.7419	.5521	.4120	.3083	.2314	.1741	.1314	.0994	.0754	.0573	.0334	.0196	.0151	.0116	.0070	.0042	.0016	.0006	.0002	.0001
40	.6717	.4529	.3066	.2083	.1420	.0972	.0668	.0460	.0318	.0221	.0107	.0053	.0037	.0026	.0013	.0007	.0002	.0001	*	*
50	.6080	.3715	.2281	.1407	.0872	.0543	.0339	.0213	.0134	.0085	.0035	.0014	.0009	.0006	.0003	.0001	*	*	*	*
60	.5504	.3048	.1697	.0951	.0535	.0303	.0173	.0099	.0057	.0033	.0011	.0004	.0002	.0001	*	*	*	*	*	*

* The factor is zero to four decimal places

Present Value of an Annuity of 1 Per Period for n Periods:

$$PVIF_{r,t} = \sum_{t=1}^{n} \frac{1}{(1+r)^t} = \frac{1 - \frac{1}{(1+r)^n}}{r}$$

Number of payments	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%	16%	18%	20%	24%	28%	32%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.8929	0.8772	0.8696	0.8621	0.8475	0.8333	0.8065	0.7813	0.7576
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.6901	1.6467	1.6257	1.6052	1.5656	1.5278	1.4568	1.3916	1.3315
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4018	2.3216	2.2832	2.2459	2.1743	2.1065	1.9813	1.8684	1.7663
4	3.9020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.0373	2.9137	2.8550	2.7982	2.6901	2.5887	2.4043	2.2410	2.0957
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6048	3.4331	3.3522	3.2743	3.1272	2.9906	2.7454	2.5320	2.3452
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.1114	3.8887	3.7845	3.6847	3.4976	3.3255	3.0205	2.7594	2.5342
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.5638	4.2883	4.1604	4.0386	3.8115	3.6046	3.2423	2.9370	2.6775
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	4.9676	4.6389	4.4873	4.3436	4.0776	3.8372	3.4212	3.0758	2.7860
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.3282	4.9464	4.7716	4.6065	4.3030	4.0310	3.5655	3.1842	2.8681
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.6502	5.2161	5.0188	4.8332	4.4941	4.1925	3.6819	3.2689	2.9304
11	10.3676	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	5.9377	5.4527	5.2337	5.0286	4.6560	4.3271	3.7757	3.3351	2.9776
12	11.2551	10.5753	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.1944	5.6603	5.4206	5.1971	4.7932	4.4392	3.8514	3.3868	3.0133
13	12.1337	11.3484	10.6350	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.4235	5.8424	5.5831	5.3423	4.9095	4.5327	3.9124	3.4272	3.0404
14	13.0037	12.1062	11.2961	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.6282	6.0021	5.7245	5.4675	5.0081	4.6106	3.9616	3.4587	3.0609
15	13.8651	12.8493	11.9379	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	6.8109	6.1422	5.8474	5.5755	5.0916	4.6755	4.0013	3.4834	3.0764
16	14.7179	13.5777	12.5611	11.6523	10.8378	10.1059	9.4466	8.8514	8.3126	7.8237	6.9740	6.2651	5.9542	5.6685	5.1624	4.7296	4.0333	3.5026	3.0882
17	15.5623	14.2919	13.1661	12.1657	11.2741	10.4773	9.7632	9.1216	8.5436	8.0216	7.1196	6.3729	6.0472	5.7487	5.2223	4.7746	4.0591	3.5177	3.0971
18	16.3983	14.9920	13.7535	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556	8.2014	7.2497	6.4674	6.1280	5.8178	5.2732	4.8122	4.0799	3.5294	3.1039
19	17.2260	15.6785	14.3238	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.3658	6.5504	6.1982	5.8775	5.3162	4.8435	4.0967	3.5386	3.1090
20	18.0456	16.3514	14.8775	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5136	7.4694	6.6231	6.2593	5.9288	5.3527	4.8696	4.1103	3.5458	3.1129
25	22.0232	19.5235	17.4131	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226	9.0770	7.8431	6.8729	6.4641	6.0971	5.4669	4.9476	4.1474	3.5640	3.1220
30	25.8077	22.3965	19.6004	17.2920	15.3725	13.7648	12.4090	11.2578	10.2737	9.4269	8.0552	7.0027	6.5660	6.1772	5.5168	4.9789	4.1601	3.5693	3.1242
40	32.8347	27.3555	23.1148	19.7928	17.1591	15.0463	13.3317	11.9246	10.7574	9.7791	8.2438	7.1050	6.6418	6.2335	5.5482	4.9966	4.1659	3.5712	3.1250
50	39.1961	31.4236	25.7298	21.4822	18.2559	15.7619	13.8007	12.2335	10.9617	9.9148	8.3045	7.1327	6.6605	6.2463	5.5541	4.9995	4.1666	3.5714	3.1250
60	44.9550	34.7609	27.6756	22.6235	18.9293	16.1614	14.0392	12.3766	11.0480	9.9672	8.3240	7.1401	6.6651	6.2402	5.5553	4.9999	4.1667	3.5714	3.1250