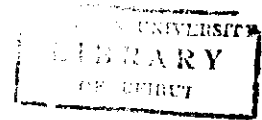


AMERICAN UNIVERSITY of BEIRUT
SCHOOL of BUSINESS
BUSS. 230
Mid-Term EXAM
Monday, April 7, 2003



NAME: _____ ID: _____

SECTION: _____ INSTRUCTOR: _____

ANSWER ALL QUESTIONS. TOTAL TIME ALLOWED: 1 1/2 hours

I. Multiple choice (30 points total). Circle the correct answer in each of the following 15 questions – (2 point for each correct answer)

1. The tendency of managers to operate a firm in a way that maximizes their personal utility rather than the firm's profits is referred to as:
 - a. Personal wealth incentive.
 - b. Principal-agent problem.
 - c. Hidden agenda scenario.
 - d. Maximization of managerial profits incentive.
 - e. Executive utility incentive.

2. Which of the following is an example of implicit costs?
 - a. Dividends paid to shareholders.
 - b. Uncompensated services by the wife of a firm's owner.
 - c. Wages of unproductive workers.
 - d. Bribes paid to win new business for the firm.
 - e. Fringe benefits awarded to top managers of the firm.

3. Assume that a firm's total revenue function has been estimated as $TR = 200Q - 20Q^2$. What would be the firm's average revenue when one unit of output is produced?
 - a. 180.
 - b. 160.
 - c. 20.
 - d. 200.
 - e. 220.

4. If a firm's marginal revenue from sales is equal to zero, then:
 - a. Total revenue is zero.
 - b. Average revenue is zero.
 - c. Total revenue is at a maximum.
 - d. Average revenue is at a maximum.
 - e. Total profits are at a maximum.

5. In a period following an economy's emergence from a recession, household income rose by 6%. Over the same period, total expenditures on beef increased by 3%. Assuming that all other economic variables were held constant,
- Income elasticity of demand must be equal to 2.
 - Beef must be a normal good.
 - Beef must be an inferior good.
 - The price of beef must have increased.
 - The supply of beef must have increased.
6. If the price of a good increases, then:
- Demand for complementary goods will increase.
 - Demand for the good will increase.
 - Demand for substitute goods will increase.
 - Demand for the good will decrease.
 - Demand for substitute goods will decrease.
7. If the price elasticity of demand for a firm's output is $> [1]$, then the firm's marginal revenue is:
- Positive and an increase in price will cause TR to increase.
 - Positive and an increase in price will cause TR to decrease.
 - Negative and an increase in price will cause TR to increase.
 - Negative and an increase in price will cause TR to decrease.
 - Zero and an increase in price will not change TR.
8. A multiple regression was estimated from 500 observations and yielded the following estimated demand equation:

$$Q = 120 - 1.1 P + 0.04I + 0.90A - 0.04 P_z$$
 If the standard errors of the independent variables are 0.25, 0.5, 0.3, and 0.01, respectively, which of the four variables is not significantly different from zero?
- P.
 - I.
 - A.
 - P_z .
 - All are significantly different from zero.
9. Ordinary Least Squares was used to estimate a linear relation between a firm's quantity sold per month and the firm's total expenditures on advertising, and the slope of the linear function is found to be >0 and significantly different from 0. Assuming all other variables, including price, were unchanged during the period covered by the data set, this result implies that:
- The firm should spend more on advertising.
 - The firm should spend less on advertising.
 - Advertising influences demand.
 - Advertising does not influence demand.
 - The demand function is upward sloping.

10. Heteroscedasticity refers to a situation where the error terms from a regression:
- Do not have equal variance.
 - Are not normally distributed.
 - Do not have a mean of zero.
 - Are all positive.
 - All of the above are correct.
11. The forecast level of sales for the month of October was 140 units. Actual sales in October turned out to be 130 units. Using an exponential smoothing coefficient of 0.6, the forecast for sales in November would be:
- 146.
 - 140.
 - 138
 - 134.
 - 130.
12. Which of the following is **NOT** a qualitative forecasting technique?
- Surveys of consumer expenditure plans.
 - Consumer intention polling.
 - Soliciting the views of sales representatives
 - Index of buying intentions of purchasing managers
 - Time-series analysis
13. Econometric forecasts require:
- Accurate estimates of the coefficients of structural equations
 - Appropriate theoretical models.
 - Forecasts of future values of exogenous variables.
 - Correcting for autocorrelation, multicollinearity, and heteroscedasticity.
 - All of the above.
14. The law of diminishing returns:
- Is reflected in the negatively sloped portion of the marginal product curve.
 - Is the result of decreasing returns to scale of production.
 - Applies in both the short-run and long-run.
 - Occurs because of fatigue among workers as they work longer hours.
 - All of the above are correct.
15. The combination of inputs is optimal:
- At points of tangency between Isoquants and Isocosts.
 - If the marginal revenue product is equal to the marginal resource cost in the case of every input.
 - If the marginal rate of technical substitution between every pair of inputs is equal to the ratio of the prices of those inputs.
 - Along the output expansion path.
 - All of the above are correct.

II. **TRUE or FALSE (20 points total).** Label your answers to the following 10 statements with either a T or an F **and briefly justify your answer.** (Each answer is worth a maximum of 2 points: 1 point for accuracy of answer and 1 point for the justification provided).

1. Business profit is equal to total revenue minus all implicit costs.
2. A firm should continue to increase an activity as long as the total revenue from the activity exceeds the total cost of the activity.
3. If the price elasticity of demand for a firm's output is found to be inelastic, then a decrease in price will reduce the firm's total revenue.
4. The more substitutes for a commodity, the lower the price elasticity of demand for the commodity.
5. If the price of a commodity rises and the amount sold increases, this indicates that the demand curve for the commodity is upward sloping.
6. The coefficient of determination of a regression is calculated as the ratio of the explained variation in the dependent variable to the unexplained variation in the independent variable.
7. The fundamental assumption of time-series analysis is that past patterns in the observed data will not continue into the future.
8. If two forecasting methods are applied to the same data set, the method that yields the larger root-mean-square error (RMSE) is preferred.
9. Output elasticity is calculated as the ratio of the marginal product of the variable input to the marginal product of the fixed input.
10. If the marginal rate of technical substitution is the same at all points on an isoquant, then the two inputs in the production function are perfect complements.

PROBLEMS – 50 points total for problems III, IV, and V

III. **15 points for correctly answering parts a, b, and c.** A firm's demand function is given by: $Q = 40 - 2P$, while its total cost function is given by $TC = 100 + 2Q + 0.25 Q^2$

- a. **For 5 points.** Determine the firm's profit function.
- b. **For 5 points.** Determine the level of output that results in maximum profits **and** the level that results in minimum profits.
- c. **For 5 points.** What is the level of profit at the optimum level of output?

IV. **15 points for correctly answering parts a, b, and c.** A firm has estimated the following demand function for its product:

$$Q = 100 - 5P + 5I + 15A$$

where Q is quantity demanded per month (in thousands), I is an index of consumer income, and A is advertising expenditure per month (in thousands). Assume that $P = 200$, $I = 150$, and $A = 30$.

- a. **For 7 points.** Calculate the quantity demanded and the point elasticity of demand. At what price is demand unitary elastic?
- b. **For 5 points.** Calculate the point income elasticity of demand and indicate whether the good is normal or inferior
- c. **For 3 points.** Calculate the advertising elasticity of demand.

V. **20 points for correctly answering parts a, b, c, d, and e.** A

pharmaceuticals company estimated the following regression for one of its medications. The estimation process utilized quarterly data for the period starting in the first quarter of 1995 and ending in the first quarter of 2003. The results were as follows:

$$S = -1.04 + 0.24 A - 0.27 Z$$

Where S = quarterly sales (in thousand cases); A = Quarterly advertising expenditures; and Z = Quarterly advertising by competitors who produce similar medications. Additional results of the regression included:

$$S_e = 1.63 ; S_a = 0.032; S_z = 0.070; R\text{-square} = 0.64; F\text{-ratio} = 31.402$$

- a. **For 4 points.** Are the signs of the coefficients in conformity with what one would expect on the basis of general theory. **EXPLAIN** why.
- b. **For 4 points.** Which of the independent variables (if any) appear to be statistically significant at the 5% level?
- c. **For 4 points.** What proportion of the total variation in sales is explained by the regression? What proportion is not explained?
- d. **For 4 points.** What would an F-test of these results indicate?
- e. **For 4 points.** Assuming annual expenditures on advertising in 2003 to be 4,000 by the company and 2,000 by its competitors, what would be the projected level of sales in the **last quarter** of 2003?

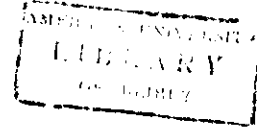
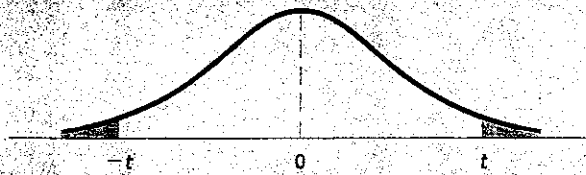


TABLE C-2 Areas in the Tails of the *t* Distribution



Degree of Freedom	Probabilities							
	.80	.60	.40	.20	.10	.05	.02	.01
1	0.325	0.727	1.376	3.078	6.314	12.706	31.821	63.657
2	0.289	0.617	1.061	1.886	2.920	4.303	6.965	9.925
3	0.277	0.584	0.978	1.638	2.353	3.182	4.541	5.841
4	0.271	0.569	0.941	1.533	2.132	2.776	3.747	4.604
5	0.267	0.559	0.920	1.476	2.015	2.571	3.365	4.032
6	0.265	0.553	0.906	1.440	1.943	2.447	3.143	3.707
7	0.263	0.549	0.896	1.415	1.895	2.365	2.998	3.499
8	0.262	0.546	0.889	1.397	1.860	2.306	2.896	3.355
9	0.261	0.543	0.883	1.383	1.833	2.262	2.821	3.250
10	0.260	0.542	0.879	1.372	1.812	2.228	2.764	3.169
11	0.260	0.540	0.876	1.363	1.796	2.201	2.718	3.106
12	0.259	0.539	0.873	1.356	1.782	2.179	2.681	3.055
13	0.259	0.538	0.870	1.350	1.771	2.160	2.650	3.012
14	0.258	0.537	0.868	1.345	1.761	2.145	2.624	2.977
15	0.258	0.536	0.866	1.341	1.753	2.131	2.602	2.947
16	0.258	0.535	0.865	1.337	1.746	2.120	2.583	2.921
17	0.257	0.534	0.863	1.333	1.740	2.110	2.567	2.898
18	0.257	0.534	0.862	1.330	1.734	2.101	2.552	2.878
19	0.257	0.533	0.861	1.328	1.729	2.093	2.539	2.861
20	0.257	0.533	0.860	1.325	1.725	2.086	2.528	2.845
21	0.257	0.532	0.859	1.323	1.721	2.080	2.518	2.831
22	0.256	0.532	0.858	1.321	1.717	2.074	2.508	2.819
23	0.256	0.532	0.858	1.319	1.714	2.069	2.500	2.807
24	0.256	0.531	0.857	1.318	1.711	2.064	2.492	2.797
25	0.256	0.531	0.856	1.316	1.708	2.060	2.485	2.787
26	0.256	0.531	0.856	1.315	1.706	2.056	2.479	2.779
27	0.256	0.531	0.855	1.314	1.703	2.052	2.473	2.771
28	0.256	0.530	0.855	1.313	1.701	2.048	2.467	2.763
29	0.256	0.530	0.854	1.311	1.699	2.045	2.462	2.756
30	0.256	0.530	0.854	1.310	1.697	2.042	2.457	2.750
40	0.255	0.529	0.851	1.303	1.684	2.021	2.423	2.704
60	0.254	0.527	0.848	1.296	1.671	2.000	2.390	2.660
120	0.254	0.526	0.845	1.289	1.658	1.980	2.358	2.617
∞	0.253	0.524	0.842	1.282	1.645	1.960	2.326	2.576

Note: The probabilities given in the table are for two-tailed tests. Thus, a probability of 0.05 allows for 0.025 in each tail. For example, for the probability of 0.05 and 21 df, $t = 2.080$. This means that 2.5 percent of the area under the *t* distribution lies to the right of $t = 2.080$, and 2.5 percent to the left of $t = -2.080$.

Source: From table III of Fisher and Yates, *Statistical Tables for Biological, Agricultural and Medical Research*, 6th ed., 1974, published by Longman Group Ltd., London (previously by Oliver & Boyd, Edinburgh), by permission of the authors and publishers.

TABLE C-3 F Distribution for 5 Percent Significance

		Degrees of Freedom for Numerator																			
		1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞	
Degrees of Freedom for Denominator	1	161	200	216	225	230	234	237	239	241	242	244	246	248	249	250	251	252	253	254	
	2	18.5	19.0	19.2	19.2	19.3	19.3	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.5	19.5	19.5	19.5	19.5	19.5	19.5
	3	10.1	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53	8.53
	4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63	5.63
	5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.37	4.37
	6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67	3.67
	7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23	3.23
	8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93	2.93
	9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71	2.71
	10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54	2.54
	11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40	2.40
	12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30	2.30
	13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21	2.21
	14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13	2.13
	15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07	2.07
	16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01	2.01
	17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.48	2.45	2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96	1.96
	18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92	1.92
	19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.39	2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88	1.88
	20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84	1.84
	21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81	1.81
	22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78	1.78
	23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.13	2.05	2.01	1.96	1.91	1.86	1.81	1.76	1.76
	24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73	1.73
	25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71	1.71
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62	1.62	
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51	1.51	
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39	1.39	
120	3.92	3.07	2.68	2.45	2.29	2.18	2.09	2.02	1.96	1.91	1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25	1.25	
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00	1.00	

Source: M. Merrington and C. M. Thompson, "Tables of Percentage Points of the Inverted Beta (F) Distribution," *Biometrika*, vol. 33, 1943, p. 73.

TABLE 3. The F-Distribution—Upper 5 Percent Points

δ_2	δ_1	1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞
1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5	241.9	243.9	245.9	248.0	249.1	250.1	251.1	252.2	253.3	254.3	
2	18.57	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40	19.41	19.43	19.45	19.45	19.46	19.47	19.48	19.49	19.50	
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53	
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63	
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.36	
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67	
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23	
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93	
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71	
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54	
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40	
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30	
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21	
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13	
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07	
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01	
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96	
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92	
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88	
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84	
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81	
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78	
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.13	2.05	2.01	1.96	1.91	1.86	1.81	1.76	
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73	
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71	
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22	2.15	2.07	1.99	1.95	1.90	1.85	1.80	1.75	1.69	
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20	2.13	2.06	1.97	1.93	1.88	1.84	1.79	1.73	1.67	
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19	2.12	2.04	1.96	1.91	1.87	1.82	1.77	1.71	1.65	
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18	2.10	2.03	1.94	1.90	1.85	1.81	1.75	1.70	1.64	
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62	
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51	
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39	
120	3.92	3.07	2.68	2.45	2.29	2.17	2.09	2.02	1.96	1.91	1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25	
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00	

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