Math 1AHP

Prof. Cemblin

Project 2

Dear, Ms.Janey:

Thank you for the opportunity to help with your environmental analysis.

Hope it will still help you to some extent.

The following is the repost respective to your issue.

Objective:

The objective of this analysis is to determine if the monthly rate of chemical deposition of HNO_3 will exceed 11.7 g/month per 1 cm^2 area (at some point in the future). Using the data you supplied in the email, this level of HN03 can be obtained by multiplying monthly precipitation (in centimeters) from Table A with average HNO_3 concentration in precipitation (g/mL) from Table B.

$$f(x) = 4.655\ sin\left(\frac{\pi x}{6} + 2.641593\right) * (0.0024958x + 0.396878)$$

Acid Rain Background Info:

Note, HNO_3 is important because it results in acid rain. A major source of HN03 is car pollution. The combustion process in cars results in NO and $N0_2$, which when combined with water in the atmosphere, create the hazardous chemical HNO_3. The increase in population and resulting car use is a cause of concern for increasing levels of HNO_3.

The increase in emissions and resulting global warming will cause a lot of people to die.

The increase in emissions results in global warming

Nitric oxide is unavoidably produced during combustion of fossil fuels in automobile engines. It is created during the combustion process where N2 is exposed to high temperatures-Nitrogen dioxide on the other hand, is a brown toxic gas (air pollutant) that is created from the oxidation of NO in air.

The resulting pollutant (from N0 and $N0_2$), Nitric acid (HNO_3) is a highly corrosive mineral acid. The major hazard posed by it is chemical burns as it carries out acid hydrolysis with proteins (amide) and fats (ester) which consequently decomposes living tissue (e.g. skin and flesh).

Analysis Overview:

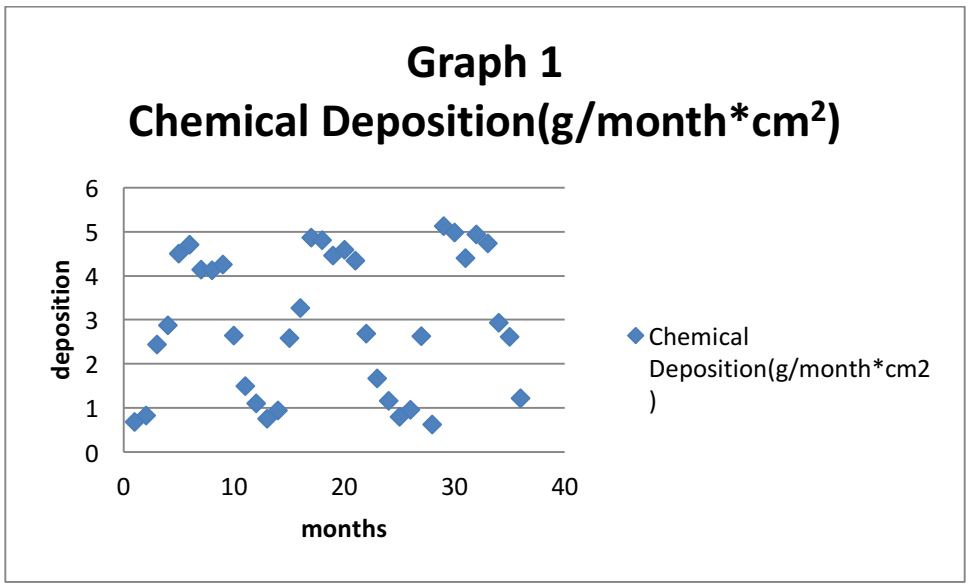
The data from both of the tables from your email is used to form the following Table 1. Since 1 inch = 2.54 cm, precipitation in centimeters can be converted from the ones in inches from your email. Additionally, as we all know that 1 mL = 1 cm^3, it is easy to get the expected chemical deposition (g/month*cm^2) by simple multiplication of precipitation in centimeters and average HNO_3 concentration in precipitation (g/mL) as this is on a given 1 cm^2 area. There are also two graphs underneath the table where Graph 1 is only with marks whereas Graph 2 is with additional smooth lines.

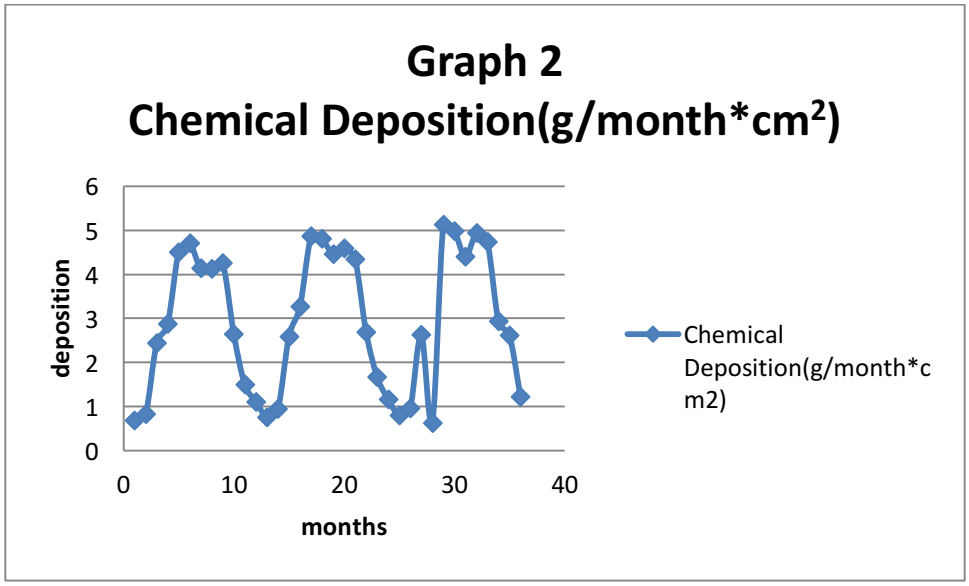
Table 1

Month	**Precipitation(*inches*)**	**Precipitation(*centimeters*)**	**Average HNO^3 Concentration in Precipitation(*g/mL*)**	**Chemical Deposition (g/month*cm^2)**
1	0.68111	1.730019	0.4004	0.6927
2	0.8111	2.060194	0.4035	0.831288
3	2.3622	5.999988	0.4062	2.437195
4	2.7717	7.040118	0.4077	2.870256

5	4.32284	10.98001	0.4101	4.502904
6	4.49212	11.40998	0.4125	4.706619
7	3.93307	9.989998	0.4137	4.132862
8	3.89371	9.890023	0.4174	4.128096
9	4.00005	10.16013	0.4185	4.252013
10	2.46851	6.270015	0.4218	2.644692
11	1.38583	3.520008	0.4249	1.495651
12	1.02756	2.610002	0.4259	1.1116
13	0.70079	1.780007	0.4282	0.762199
14	0.86221	2.190013	0.4308	0.943458
15	2.35433	5.979998	0.4332	2.590535
16	2.95669	7.509993	0.4357	3.272104
17	4.36615	11.09002	0.4381	4.858538
18	4.28741	10.89002	0.4411	4.803588
19	3.95669	10.04999	0.4441	4.463202
20	4.05118	10.29	0.4456	4.585223
21	3.80709	9.670009	0.4491	4.342801
22	2.34252	5.950001	0.4514	2.68583
23	1.45669	3.699993	0.4533	1.677207

24	1.00394	2.550008	0.4568	1.164843
25	0.68504	1.740002	0.4588	0.798313
26	0.82284	2.090014	0.4602	0.961824
27	2.23622	5.679999	0.4639	2.634951
28	0.53543	1.359992	0.4659	0.63362
29	4.28743	10.89007	0.4701	5.119423
30	4.15748	10.56	0.4716	4.980096
31	3.65355	9.280017	0.4744	4.40244
32	4.07087	10.34001	0.4774	4.936321
33	3.87401	9.839985	0.4806	4.729097
34	2.39371	6.080023	0.4835	2.939691
35	2.12204	5.389982	0.4855	2.616836
36	0.99213	2.52001	0.4879	1.229513





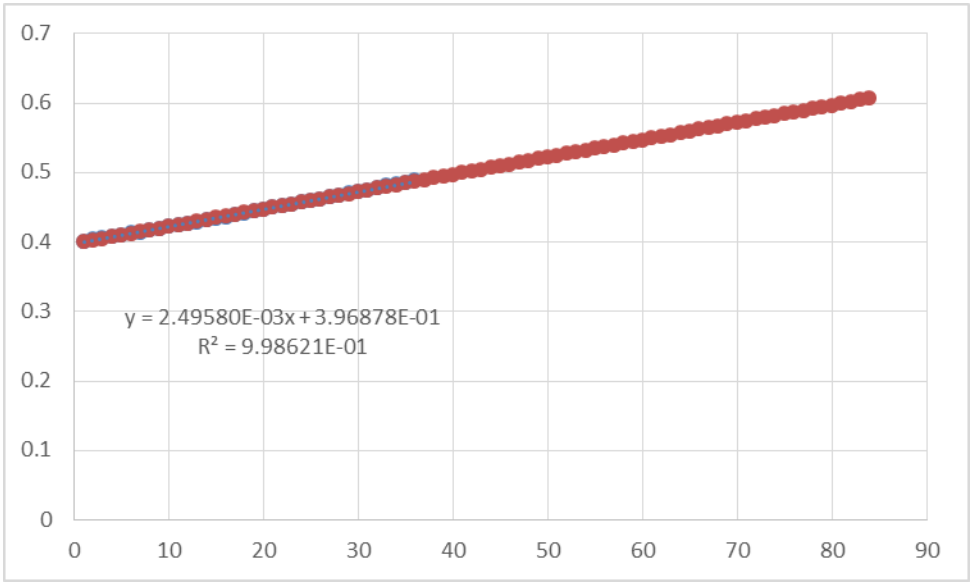
From Graph 2, it is apparent that there's an approximate annual peak of chemical deposition during the past 3 years which seems like a sinusoidal function at the glance. During the 3 years of the data, the population grew 8% per year. However, if we model it as a Trigonometric regression, this will conflicts with the projection that our population of over 250,000 will continue to grow at an

approximate 8% rate over the next ten years given that the increased amount of pollutants come from the exhaust of cars people use. Because, the vertical variable of Trigonometric function won't arise along with the horizontal variable which will lead to pure repetition of data in this case. Additionally, it is also clear that there's the trend of increasing vertical variable as the horizontal one approaches infinity.

First, to simplify the modeling, the function of Precipitation in centimeters (Graph 3) and the function of Average HNO_3 Concentration in Precipitation (g/mL) (Graph 4) are better to be modeled separately with the respect to the change of time from the data in the Table 1 via Microsoft Excel. For Graph 4, we have Table 2 to indicate the function: $f(x) = 4.655\ sin\ (\frac{\pi x}{6} + 2.641593)$. Afterwards, the Graph 5 is resulted from the multiplication of the functions from Graph 3 and Graph 4. Finally, the function could be apparently modeled as $f(x) = 4.655\ sin\ \left(\frac{\pi x}{6} + 2.641593\right) * (0.0024958x + 0.396878)$.

Graph 3

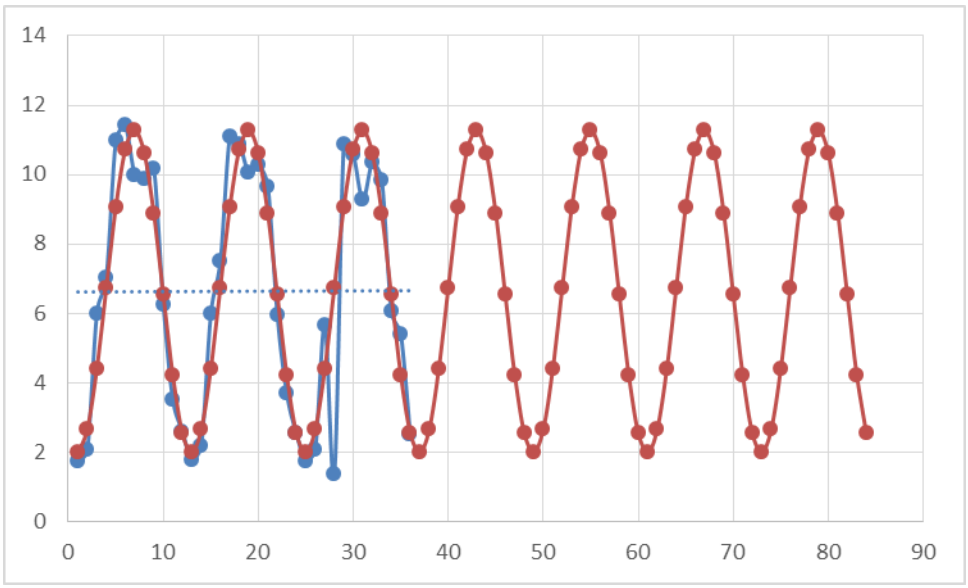
Y-Precipitation (cm)



X-months

Graph 4

Y-Average HNO3 Concentration in Precipitation (g/mL)



X-months

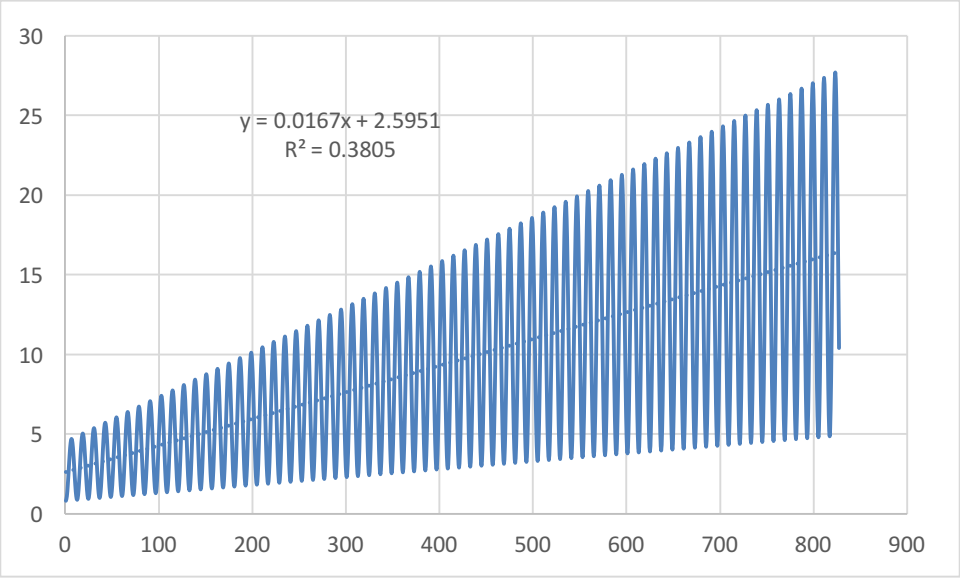
Table 2

DC bias	6.641129

T	12
A	4.655
f	0.083333
phi	2.641593

Graph 5

Y-Chemical Deposition (g/month*cm2)



X-months

$Y = 0.0167X + 2.5951$ is the mean in Graph 5.

Finally, by figuring out what is the value of x when the chemical deposition (g/month*cm2), the value of f(x) is bigger than 11.7(g/month*cm2) as in the following Table 3, the True or False function from Microsoft Excel is entailed to test. Thus, the answer is 259 months as highlighted in the Table 3 when this is likely to exceed 11.7/g per month on a given 1 cm^2 area. Therefore, there is urge to conserve our environment right from now.

Then end of the report.

Table 3

month	precipitation (cm)	month	concentration (g/mL)	deposition (g/month *cm2)	>11.7 (g/ mL)?
1	1.987425	1	0.399374	0.793726	0
2	2.665824	2	0.40187	1.071314	0
3	4.409403	3	0.404365	1.78301	0
4	6.750971	4	0.406861	2.746708	0
5	9.063107	5	0.409357	3.710046	0
6	10.72628	6	0.411853	4.417647	0
7	11.29483	7	0.414349	4.679998	0
8	10.61643	8	0.416844	4.425401	0
9	8.872855	9	0.41934	3.720745	0
10	6.531287	10	0.421836	2.755132	0
11	4.219151	11	0.424332	1.79032	0

12	2.555982	12	0.426828	1.090964	0
13	1.987425	13	0.429323	0.853248	0
14	2.665824	14	0.431819	1.151154	0
15	4.409403	15	0.434315	1.91507	0
16	6.750971	16	0.436811	2.948897	0
17	9.063107	17	0.439307	3.981483	0
18	10.72628	18	0.441802	4.738894	0
19	11.29483	19	0.444298	5.018274	0
20	10.61643	20	0.446794	4.743359	0
21	8.872855	21	0.44929	3.986483	0
22	6.531287	22	0.451786	2.950741	0
23	4.219151	23	0.454281	1.916682	0
24	2.555982	24	0.456777	1.167514	0
25	1.987425	25	0.459273	0.912771	0
26	2.665824	26	0.461769	1.230995	0
27	4.409403	27	0.464265	2.04713	0
28	6.750971	28	0.46676	3.151086	0
29	9.063107	29	0.469256	4.252919	0
30	10.72628	30	0.471752	5.060142	0
31	11.29483	31	0.474248	5.35655	0
32	10.61643	32	0.476744	5.061317	0
33	8.872855	33	0.479239	4.252222	0
34	6.531287	34	0.481735	3.146351	0
35	4.219151	35	0.484231	2.043044	0
36	2.555982	36	0.486727	1.244065	0

37	1.987425	37	0.489223	0.972293	0
38	2.665824	38	0.491718	1.310835	0
39	4.409403	39	0.494214	2.17919	0
40	6.750971	40	0.49671	3.353275	0
41	9.063107	41	0.499206	4.524356	0
42	10.72628	42	0.501702	5.38139	0
43	11.29483	43	0.504197	5.694825	0
44	10.61643	44	0.506693	5.379275	0
45	8.872855	45	0.509189	4.51796	0
46	6.531287	46	0.511685	3.34196	0
47	4.219151	47	0.514181	2.169406	0
48	2.555982	48	0.516676	1.320616	0
49	1.987425	49	0.519172	1.031816	0
50	2.665824	50	0.521668	1.390675	0
51	4.409403	51	0.524164	2.31125	0
52	6.750971	52	0.52666	3.555464	0
53	9.063107	53	0.529155	4.795792	0
54	10.72628	54	0.531651	5.702637	0
55	11.29483	55	0.534147	6.033101	0
56	10.61643	56	0.536643	5.697233	0
57	8.872855	57	0.539139	4.783699	0
58	6.531287	58	0.541634	3.53757	0
59	4.219151	59	0.54413	2.295768	0
60	2.555982	60	0.546626	1.397166	0
61	1.987425	61	0.549122	1.091339	0

62	2.665824	62	0.551618	1.470516	0
63	4.409403	63	0.554113	2.443309	0
64	6.750971	64	0.556609	3.757653	0
65	9.063107	65	0.559105	5.067229	0
66	10.72628	66	0.561601	6.023885	0
67	11.29483	67	0.564097	6.371377	0
68	10.61643	68	0.566592	6.015191	0
69	8.872855	69	0.569088	5.049437	0
70	6.531287	70	0.571584	3.733179	0
71	4.219151	71	0.57408	2.422129	0
72	2.555982	72	0.576576	1.473717	0
73	1.987425	73	0.579071	1.150861	0
74	2.665824	74	0.581567	1.550356	0
75	4.409403	75	0.584063	2.575369	0
76	6.750971	76	0.586559	3.959842	0
77	9.063107	77	0.589055	5.338665	0
78	10.72628	78	0.59155	6.345133	0
79	11.29483	79	0.594046	6.709653	0
80	10.61643	80	0.596542	6.333149	0
81	8.872855	81	0.599038	5.315176	0
82	6.531287	82	0.601534	3.928789	0
83	4.219151	83	0.604029	2.548491	0
84	2.555982	84	0.606525	1.550268	0
85	1.987425	85	0.609021	1.210384	0
86	2.665824	86	0.611517	1.630196	0

87	4.409403	87	0.614013	2.707429	0
88	6.750971	88	0.616508	4.16203	0
89	9.063107	89	0.619004	5.610101	0
90	10.72628	90	0.6215	6.666381	0
91	11.29483	91	0.623996	7.047928	0
92	10.61643	92	0.626492	6.651107	0
93	8.872855	93	0.628987	5.580914	0
94	6.531287	94	0.631483	4.124398	0
95	4.219151	95	0.633979	2.674853	0
96	2.555982	96	0.636475	1.626818	0
97	1.987425	97	0.638971	1.269906	0
98	2.665824	98	0.641466	1.710037	0
99	4.409403	99	0.643962	2.839489	0
100	6.750971	100	0.646458	4.364219	0
101	9.063107	101	0.648954	5.881538	0
102	10.72628	102	0.65145	6.987628	0
103	11.29483	103	0.653945	7.386204	0
104	10.61643	104	0.656441	6.969065	0
105	8.872855	105	0.658937	5.846652	0
106	6.531287	106	0.661433	4.320007	0
107	4.219151	107	0.663929	2.801215	0
108	2.555982	108	0.666424	1.703369	0
109	1.987425	109	0.66892	1.329429	0
110	2.665824	110	0.671416	1.789877	0
111	4.409403	111	0.673912	2.971549	0

112	6.750971	112	0.676408	4.566408	0
113	9.063107	113	0.678903	6.152974	0
114	10.72628	114	0.681399	7.308876	0
115	11.29483	115	0.683895	7.72448	0
116	10.61643	116	0.686391	7.287023	0
117	8.872855	117	0.688887	6.112391	0
118	6.531287	118	0.691382	4.515617	0
119	4.219151	119	0.693878	2.927577	0
120	2.555982	120	0.696374	1.77992	0
121	1.987425	121	0.69887	1.388952	0
122	2.665824	122	0.701366	1.869718	0
123	4.409403	123	0.703861	3.103609	0
124	6.750971	124	0.706357	4.768597	0
125	9.063107	125	0.708853	6.424411	0
126	10.72628	126	0.711349	7.630124	0
127	11.29483	127	0.713845	8.062756	0
128	10.61643	128	0.71634	7.60498	0
129	8.872855	129	0.718836	6.378129	0
130	6.531287	130	0.721332	4.711226	0
131	4.219151	131	0.723828	3.053939	0
132	2.555982	132	0.726324	1.85647	0
133	1.987425	133	0.728819	1.448474	0
134	2.665824	134	0.731315	1.949558	0
135	4.409403	135	0.733811	3.235669	0
136	6.750971	136	0.736307	4.970786	0

137	9.063107	137	0.738803	6.695847	0
138	10.72628	138	0.741298	7.951371	0
139	11.29483	139	0.743794	8.401031	0
140	10.61643	140	0.74629	7.922938	0
141	8.872855	141	0.748786	6.643868	0
142	6.531287	142	0.751282	4.906836	0
143	4.219151	143	0.753777	3.180301	0
144	2.555982	144	0.756273	1.933021	0
145	1.987425	145	0.758769	1.507997	0
146	2.665824	146	0.761265	2.029398	0
147	4.409403	147	0.763761	3.367728	0
148	6.750971	148	0.766256	5.172975	0
149	9.063107	149	0.768752	6.967284	0
150	10.72628	150	0.771248	8.272619	0
151	11.29483	151	0.773744	8.739307	0
152	10.61643	152	0.77624	8.240896	0
153	8.872855	153	0.778735	6.909606	0
154	6.531287	154	0.781231	5.102445	0
155	4.219151	155	0.783727	3.306663	0
156	2.555982	156	0.786223	2.009572	0
157	1.987425	157	0.788719	1.567519	0
158	2.665824	158	0.791214	2.109239	0
159	4.409403	159	0.79371	3.499788	0
160	6.750971	160	0.796206	5.375164	0
161	9.063107	161	0.798702	7.23872	0

162	10.72628	162	0.801198	8.593867	0
163	11.29483	163	0.803693	9.077583	0
164	10.61643	164	0.806189	8.558854	0
165	8.872855	165	0.808685	7.175345	0
166	6.531287	166	0.811181	5.298055	0
167	4.219151	167	0.813677	3.433025	0
168	2.555982	168	0.816172	2.086122	0
169	1.987425	169	0.818668	1.627042	0
170	2.665824	170	0.821164	2.189079	0
171	4.409403	171	0.82366	3.631848	0
172	6.750971	172	0.826156	5.577353	0
173	9.063107	173	0.828651	7.510156	0
174	10.72628	174	0.831147	8.915114	0
175	11.29483	175	0.833643	9.415858	0
176	10.61643	176	0.836139	8.876812	0
177	8.872855	177	0.838635	7.441083	0
178	6.531287	178	0.84113	5.493664	0
179	4.219151	179	0.843626	3.559386	0
180	2.555982	180	0.846122	2.162673	0
181	1.987425	181	0.848618	1.686564	0
182	2.665824	182	0.851114	2.268919	0
183	4.409403	183	0.853609	3.763908	0
184	6.750971	184	0.856105	5.779542	0
185	9.063107	185	0.858601	7.781593	0
186	10.72628	186	0.861097	9.236362	0

187	11.29483	187	0.863593	9.754134	0
188	10.61643	188	0.866088	9.19477	0
189	8.872855	189	0.868584	7.706822	0
190	6.531287	190	0.87108	5.689274	0
191	4.219151	191	0.873576	3.685748	0
192	2.555982	192	0.876072	2.239224	0
193	1.987425	193	0.878567	1.746087	0
194	2.665824	194	0.881063	2.34876	0
195	4.409403	195	0.883559	3.895968	0
196	6.750971	196	0.886055	5.98173	0
197	9.063107	197	0.888551	8.053029	0
198	10.72628	198	0.891046	9.55761	0
199	11.29483	199	0.893542	10.09241	0
200	10.61643	200	0.896038	9.512728	0
201	8.872855	201	0.898534	7.97256	0
202	6.531287	202	0.90103	5.884883	0
203	4.219151	203	0.903525	3.81211	0
204	2.555982	204	0.906021	2.315774	0
205	1.987425	205	0.908517	1.80561	0
206	2.665824	206	0.911013	2.4286	0
207	4.409403	207	0.913509	4.028028	0
208	6.750971	208	0.916004	6.183919	0
209	9.063107	209	0.9185	8.324466	0
210	10.72628	210	0.920996	9.878857	0
211	11.29483	211	0.923492	10.43069	0

212	10.61643	212	0.925988	9.830686	0
213	8.872855	213	0.928483	8.238299	0
214	6.531287	214	0.930979	6.080492	0
215	4.219151	215	0.933475	3.938472	0
216	2.555982	216	0.935971	2.392325	0
217	1.987425	217	0.938467	1.865132	0
218	2.665824	218	0.940962	2.508441	0
219	4.409403	219	0.943458	4.160088	0
220	6.750971	220	0.945954	6.386108	0
221	9.063107	221	0.94845	8.595902	0
222	10.72628	222	0.950946	10.2001	0
223	11.29483	223	0.953441	10.76896	0
224	10.61643	224	0.955937	10.14864	0
225	8.872855	225	0.958433	8.504037	0
226	6.531287	226	0.960929	6.276102	0
227	4.219151	227	0.963425	4.064834	0
228	2.555982	228	0.96592	2.468875	0
229	1.987425	229	0.968416	1.924655	0
230	2.665824	230	0.970912	2.588281	0
231	4.409403	231	0.973408	4.292148	0
232	6.750971	232	0.975904	6.588297	0
233	9.063107	233	0.978399	8.867339	0
234	10.72628	234	0.980895	10.52135	0
235	11.29483	235	0.983391	11.10724	0
236	10.61643	236	0.985887	10.4666	0

237	8.872855	237	0.988383	8.769776	0
238	6.531287	238	0.990878	6.471711	0
239	4.219151	239	0.993374	4.191196	0
240	2.555982	240	0.99587	2.545426	0
241	1.987425	241	0.998366	1.984177	0
242	2.665824	242	1.000862	2.668121	0
243	4.409403	243	1.003357	4.424207	0
244	6.750971	244	1.005853	6.790486	0
245	9.063107	245	1.008349	9.138775	0
246	10.72628	246	1.010845	10.8426	0
247	11.29483	247	1.013341	11.44551	0
248	10.61643	248	1.015836	10.78456	0
249	8.872855	249	1.018332	9.035514	0
250	6.531287	250	1.020828	6.667321	0
251	4.219151	251	1.023324	4.317558	0
252	2.555982	252	1.02582	2.621977	0
253	1.987425	253	1.028315	2.0437	0
254	2.665824	254	1.030811	2.747962	0
255	4.409403	255	1.033307	4.556267	0
256	6.750971	256	1.035803	6.992675	0
257	9.063107	257	1.038299	9.410211	0
258	10.72628	258	1.040794	11.16385	0
259	11.29483	259	1.04329	11.78379	1
260	10.61643	260	1.045786	11.10252	0
261	8.872855	261	1.048282	9.301252	0

262	6.531287	262	1.050778	6.86293	0
263	4.219151	263	1.053273	4.44392	0
264	2.555982	264	1.055769	2.698527	0
265	1.987425	265	1.058265	2.103223	0
266	2.665824	266	1.060761	2.827802	0
267	4.409403	267	1.063257	4.688327	0
268	6.750971	268	1.065752	7.194864	0
269	9.063107	269	1.068248	9.681648	0
270	10.72628	270	1.070744	11.4851	0
271	11.29483	271	1.07324	12.12206	1
272	10.61643	272	1.075736	11.42048	0
273	8.872855	273	1.078231	9.566991	0
274	6.531287	274	1.080727	7.05854	0
275	4.219151	275	1.083223	4.570282	0
276	2.555982	276	1.085719	2.775078	0
277	1.987425	277	1.088215	2.162745	0
278	2.665824	278	1.09071	2.907642	0
279	4.409403	279	1.093206	4.820387	0
280	6.750971	280	1.095702	7.397053	0
281	9.063107	281	1.098198	9.953084	0
282	10.72628	282	1.100694	11.80634	1
283	11.29483	283	1.103189	12.46034	1
284	10.61643	284	1.105685	11.73843	1
285	8.872855	285	1.108181	9.832729	0
286	6.531287	286	1.110677	7.254149	0

287	4.219151	287	1.113173	4.696643	0
288	2.555982	288	1.115668	2.851629	0
289	1.987425	289	1.118164	2.222268	0
290	2.665824	290	1.12066	2.987483	0
291	4.409403	291	1.123156	4.952447	0
292	6.750971	292	1.125652	7.599242	0
293	9.063107	293	1.128147	10.22452	0
294	10.72628	294	1.130643	12.12759	1
295	11.29483	295	1.133139	12.79862	1
296	10.61643	296	1.135635	12.05639	1
297	8.872855	297	1.138131	10.09847	0
298	6.531287	298	1.140626	7.449758	0
299	4.219151	299	1.143122	4.823005	0
300	2.555982	300	1.145618	2.928179	0
301	1.987425	301	1.148114	2.28179	0
302	2.665824	302	1.15061	3.067323	0
303	4.409403	303	1.153105	5.084507	0
304	6.750971	304	1.155601	7.80143	0
305	9.063107	305	1.158097	10.49596	0
306	10.72628	306	1.160593	12.44884	1
307	11.29483	307	1.163089	13.13689	1
308	10.61643	308	1.165584	12.37435	1
309	8.872855	309	1.16808	10.36421	0
310	6.531287	310	1.170576	7.645368	0
311	4.219151	311	1.173072	4.949367	0

312	2.555982	312	1.175568	3.00473	0
313	1.987425	313	1.178063	2.341313	0
314	2.665824	314	1.180559	3.147164	0
315	4.409403	315	1.183055	5.216567	0
316	6.750971	316	1.185551	8.003619	0
317	9.063107	317	1.188047	10.76739	0
318	10.72628	318	1.190542	12.77009	1
319	11.29483	319	1.193038	13.47517	1
320	10.61643	320	1.195534	12.69231	1
321	8.872855	321	1.19803	10.62994	0
322	6.531287	322	1.200526	7.840977	0
323	4.219151	323	1.203021	5.075729	0
324	2.555982	324	1.205517	3.081281	0
325	1.987425	325	1.208013	2.400836	0
326	2.665824	326	1.210509	3.227004	0
327	4.409403	327	1.213005	5.348626	0
328	6.750971	328	1.2155	8.205808	0
329	9.063107	329	1.217996	11.03883	0
330	10.72628	330	1.220492	13.09133	1
331	11.29483	331	1.222988	13.81344	1
332	10.61643	332	1.225484	13.01027	1
333	8.872855	333	1.227979	10.89568	0
334	6.531287	334	1.230475	8.036587	0
335	4.219151	335	1.232971	5.202091	0
336	2.555982	336	1.235467	3.157831	0

337	1.987425	337	1.237963	2.460358	0
338	2.665824	338	1.240458	3.306844	0
339	4.409403	339	1.242954	5.480686	0
340	6.750971	340	1.24545	8.407997	0
341	9.063107	341	1.247946	11.31027	0
342	10.72628	342	1.250442	13.41258	1
343	11.29483	343	1.252937	14.15172	1
344	10.61643	344	1.255433	13.32822	1
345	8.872855	345	1.257929	11.16142	0
346	6.531287	346	1.260425	8.232196	0
347	4.219151	347	1.262921	5.328453	0
348	2.555982	348	1.265416	3.234382	0
349	1.987425	349	1.267912	2.519881	0
350	2.665824	350	1.270408	3.386685	0
351	4.409403	351	1.272904	5.612746	0
352	6.750971	352	1.2754	8.610186	0
353	9.063107	353	1.277895	11.5817	0
354	10.72628	354	1.280391	13.73383	1
355	11.29483	355	1.282887	14.48999	1
356	10.61643	356	1.285383	13.64618	1
357	8.872855	357	1.287879	11.42716	0
358	6.531287	358	1.290374	8.427806	0
359	4.219151	359	1.29287	5.454815	0
360	2.555982	360	1.295366	3.310933	0
361	1.987425	361	1.297862	2.579403	0

362	2.665824	362	1.300358	3.466525	0
363	4.409403	363	1.302853	5.744806	0
364	6.750971	364	1.305349	8.812375	0
365	9.063107	365	1.307845	11.85314	1
366	10.72628	366	1.310341	14.05508	1
367	11.29483	367	1.312837	14.82827	1
368	10.61643	368	1.315332	13.96414	1
369	8.872855	369	1.317828	11.6929	0
370	6.531287	370	1.320324	8.623415	0
371	4.219151	371	1.32282	5.581177	0
372	2.555982	372	1.325316	3.387483	0
373	1.987425	373	1.327811	2.638926	0
374	2.665824	374	1.330307	3.546365	0
375	4.409403	375	1.332803	5.876866	0
376	6.750971	376	1.335299	9.014564	0
377	9.063107	377	1.337795	12.12458	1
378	10.72628	378	1.34029	14.37632	1
379	11.29483	379	1.342786	15.16655	1
380	10.61643	380	1.345282	14.2821	1
381	8.872855	381	1.347778	11.95864	1
382	6.531287	382	1.350274	8.819024	0
383	4.219151	383	1.352769	5.707539	0
384	2.555982	384	1.355265	3.464034	0
385	1.987425	385	1.357761	2.698449	0
386	2.665824	386	1.360257	3.626206	0

387	4.409403	387	1.362753	6.008926	0
388	6.750971	388	1.365248	9.216753	0
389	9.063107	389	1.367744	12.39601	1
390	10.72628	390	1.37024	14.69757	1
391	11.29483	391	1.372736	15.50482	1
392	10.61643	392	1.375232	14.60006	1
393	8.872855	393	1.377727	12.22438	1
394	6.531287	394	1.380223	9.014634	0
395	4.219151	395	1.382719	5.8339	0
396	2.555982	396	1.385215	3.540585	0
397	1.987425	397	1.387711	2.757971	0
398	2.665824	398	1.390206	3.706046	0
399	4.409403	399	1.392702	6.140986	0
400	6.750971	400	1.395198	9.418942	0
401	9.063107	401	1.397694	12.66745	1
402	10.72628	402	1.40019	15.01882	1
403	11.29483	403	1.402685	15.8431	1
404	10.61643	404	1.405181	14.91801	1
405	8.872855	405	1.407677	12.49011	1
406	6.531287	406	1.410173	9.210243	0
407	4.219151	407	1.412669	5.960262	0
408	2.555982	408	1.415164	3.617135	0
409	1.987425	409	1.41766	2.817494	0
410	2.665824	410	1.420156	3.785887	0
411	4.409403	411	1.422652	6.273046	0

412	6.750971	412	1.425148	9.62113	0
413	9.063107	413	1.427643	12.93889	1
414	10.72628	414	1.430139	15.34007	1
415	11.29483	415	1.432635	16.18137	1
416	10.61643	416	1.435131	15.23597	1
417	8.872855	417	1.437627	12.75585	1
418	6.531287	418	1.440122	9.405853	0
419	4.219151	419	1.442618	6.086624	0
420	2.555982	420	1.445114	3.693686	0
421	1.987425	421	1.44761	2.877016	0
422	2.665824	422	1.450106	3.865727	0
423	4.409403	423	1.452601	6.405105	0
424	6.750971	424	1.455097	9.823319	0
425	9.063107	425	1.457593	13.21032	1
426	10.72628	426	1.460089	15.66132	1
427	11.29483	427	1.462585	16.51965	1
428	10.61643	428	1.46508	15.55393	1
429	8.872855	429	1.467576	13.02159	1
430	6.531287	430	1.470072	9.601462	0
431	4.219151	431	1.472568	6.212986	0
432	2.555982	432	1.475064	3.770236	0
433	1.987425	433	1.477559	2.936539	0
434	2.665824	434	1.480055	3.945567	0
435	4.409403	435	1.482551	6.537165	0
436	6.750971	436	1.485047	10.02551	0

437	9.063107	437	1.487543	13.48176	1
438	10.72628	438	1.490038	15.98256	1
439	11.29483	439	1.492534	16.85792	1
440	10.61643	440	1.49503	15.87189	1
441	8.872855	441	1.497526	13.28733	1
442	6.531287	442	1.500022	9.797072	0
443	4.219151	443	1.502517	6.339348	0
444	2.555982	444	1.505013	3.846787	0
445	1.987425	445	1.507509	2.996062	0
446	2.665824	446	1.510005	4.025408	0
447	4.409403	447	1.512501	6.669225	0
448	6.750971	448	1.514996	10.2277	0
449	9.063107	449	1.517492	13.75319	1
450	10.72628	450	1.519988	16.30381	1
451	11.29483	451	1.522484	17.1962	1
452	10.61643	452	1.52498	16.18985	1
453	8.872855	453	1.527475	13.55307	1
454	6.531287	454	1.529971	9.992681	0
455	4.219151	455	1.532467	6.46571	0
456	2.555982	456	1.534963	3.923338	0
457	1.987425	457	1.537459	3.055584	0
458	2.665824	458	1.539954	4.105248	0
459	4.409403	459	1.54245	6.801285	0
460	6.750971	460	1.544946	10.42989	0
461	9.063107	461	1.547442	14.02463	1

462	10.72628	462	1.549938	16.62506	1
463	11.29483	463	1.552433	17.53448	1
464	10.61643	464	1.554929	16.5078	1
465	8.872855	465	1.557425	13.81881	1
466	6.531287	466	1.559921	10.18829	0
467	4.219151	467	1.562417	6.592072	0
468	2.555982	468	1.564912	3.999888	0
469	1.987425	469	1.567408	3.115107	0
470	2.665824	470	1.569904	4.185088	0
471	4.409403	471	1.5724	6.933345	0
472	6.750971	472	1.574896	10.63207	0
473	9.063107	473	1.577391	14.29607	1
474	10.72628	474	1.579887	16.94631	1
475	11.29483	475	1.582383	17.87275	1
476	10.61643	476	1.584879	16.82576	1
477	8.872855	477	1.587375	14.08454	1
478	6.531287	478	1.58987	10.3839	0
479	4.219151	479	1.592366	6.718434	0
480	2.555982	480	1.594862	4.076439	0
481	1.987425	481	1.597358	3.174629	0
482	2.665824	482	1.599854	4.264929	0
483	4.409403	483	1.602349	7.065405	0
484	6.750971	484	1.604845	10.83426	0
485	9.063107	485	1.607341	14.5675	1
486	10.72628	486	1.609837	17.26755	1

487	11.29483	487	1.612333	18.21103	1
488	10.61643	488	1.614828	17.14372	1
489	8.872855	489	1.617324	14.35028	1
490	6.531287	490	1.61982	10.57951	0
491	4.219151	491	1.622316	6.844796	0
492	2.555982	492	1.624812	4.15299	0
493	1.987425	493	1.627307	3.234152	0
494	2.665824	494	1.629803	4.344769	0
495	4.409403	495	1.632299	7.197465	0
496	6.750971	496	1.634795	11.03645	0
497	9.063107	497	1.637291	14.83894	1
498	10.72628	498	1.639786	17.5888	1
499	11.29483	499	1.642282	18.5493	1
500	10.61643	500	1.644778	17.46168	1
501	8.872855	501	1.647274	14.61602	1
502	6.531287	502	1.64977	10.77512	0
503	4.219151	503	1.652265	6.971157	0
504	2.555982	504	1.654761	4.22954	0
505	1.987425	505	1.657257	3.293674	0
506	2.665824	506	1.659753	4.42461	0
507	4.409403	507	1.662249	7.329524	0
508	6.750971	508	1.664744	11.23864	0
509	9.063107	509	1.66724	15.11038	1
510	10.72628	510	1.669736	17.91005	1
511	11.29483	511	1.672232	18.88758	1

512	10.61643	512	1.674728	17.77963	1
513	8.872855	513	1.677223	14.88176	1
514	6.531287	514	1.679719	10.97073	0
515	4.219151	515	1.682215	7.097519	0
516	2.555982	516	1.684711	4.306091	0
517	1.987425	517	1.687207	3.353197	0
518	2.665824	518	1.689702	4.50445	0
519	4.409403	519	1.692198	7.461584	0
520	6.750971	520	1.694694	11.44083	0
521	9.063107	521	1.69719	15.38181	1
522	10.72628	522	1.699686	18.2313	1
523	11.29483	523	1.702181	19.22585	1
524	10.61643	524	1.704677	18.09759	1
525	8.872855	525	1.707173	15.1475	1
526	6.531287	526	1.709669	11.16634	0
527	4.219151	527	1.712165	7.223881	0
528	2.555982	528	1.71466	4.382642	0
529	1.987425	529	1.717156	3.41272	0
530	2.665824	530	1.719652	4.58429	0
531	4.409403	531	1.722148	7.593644	0
532	6.750971	532	1.724644	11.64302	0
533	9.063107	533	1.727139	15.65325	1
534	10.72628	534	1.729635	18.55254	1
535	11.29483	535	1.732131	19.56413	1
536	10.61643	536	1.734627	18.41555	1

537	8.872855	537	1.737123	15.41324	1
538	6.531287	538	1.739618	11.36195	0
539	4.219151	539	1.742114	7.350243	0
540	2.555982	540	1.74461	4.459192	0
541	1.987425	541	1.747106	3.472242	0
542	2.665824	542	1.749602	4.664131	0
543	4.409403	543	1.752097	7.725704	0
544	6.750971	544	1.754593	11.84521	1
545	9.063107	545	1.757089	15.92469	1
546	10.72628	546	1.759585	18.87379	1
547	11.29483	547	1.762081	19.90241	1
548	10.61643	548	1.764576	18.73351	1
549	8.872855	549	1.767072	15.67898	1
550	6.531287	550	1.769568	11.55756	0
551	4.219151	551	1.772064	7.476605	0
552	2.555982	552	1.77456	4.535743	0
553	1.987425	553	1.777055	3.531765	0
554	2.665824	554	1.779551	4.743971	0
555	4.409403	555	1.782047	7.857764	0
556	6.750971	556	1.784543	12.0474	1
557	9.063107	557	1.787039	16.19612	1
558	10.72628	558	1.789534	19.19504	1
559	11.29483	559	1.79203	20.24068	1
560	10.61643	560	1.794526	19.05147	1
561	8.872855	561	1.797022	15.94471	1

562	6.531287	562	1.799518	11.75317	1
563	4.219151	563	1.802013	7.602967	0
564	2.555982	564	1.804509	4.612294	0
565	1.987425	565	1.807005	3.591287	0
566	2.665824	566	1.809501	4.823811	0
567	4.409403	567	1.811997	7.989824	0
568	6.750971	568	1.814492	12.24959	1
569	9.063107	569	1.816988	16.46756	1
570	10.72628	570	1.819484	19.51629	1
571	11.29483	571	1.82198	20.57896	1
572	10.61643	572	1.824476	19.36942	1
573	8.872855	573	1.826971	16.21045	1
574	6.531287	574	1.829467	11.94878	1
575	4.219151	575	1.831963	7.729329	0
576	2.555982	576	1.834459	4.688844	0
577	1.987425	577	1.836955	3.65081	0
578	2.665824	578	1.83945	4.903652	0
579	4.409403	579	1.841946	8.121884	0
580	6.750971	580	1.844442	12.45177	1
581	9.063107	581	1.846938	16.739	1
582	10.72628	582	1.849434	19.83754	1
583	11.29483	583	1.851929	20.91723	1
584	10.61643	584	1.854425	19.68738	1
585	8.872855	585	1.856921	16.47619	1
586	6.531287	586	1.859417	12.14438	1

587	4.219151	587	1.861913	7.855691	0
588	2.555982	588	1.864408	4.765395	0
589	1.987425	589	1.866904	3.710333	0
590	2.665824	590	1.8694	4.983492	0
591	4.409403	591	1.871896	8.253943	0
592	6.750971	592	1.874392	12.65396	1
593	9.063107	593	1.876887	17.01043	1
594	10.72628	594	1.879383	20.15878	1
595	11.29483	595	1.881879	21.25551	1
596	10.61643	596	1.884375	20.00534	1
597	8.872855	597	1.886871	16.74193	1
598	6.531287	598	1.889366	12.33999	1
599	4.219151	599	1.891862	7.982053	0
600	2.555982	600	1.894358	4.841946	0
601	1.987425	601	1.896854	3.769855	0
602	2.665824	602	1.89935	5.063333	0
603	4.409403	603	1.901845	8.386003	0
604	6.750971	604	1.904341	12.85615	1
605	9.063107	605	1.906837	17.28187	1
606	10.72628	606	1.909333	20.48003	1
607	11.29483	607	1.911829	21.59378	1
608	10.61643	608	1.914324	20.3233	1
609	8.872855	609	1.91682	17.00767	1
610	6.531287	610	1.919316	12.5356	1
611	4.219151	611	1.921812	8.108414	0

612	2.555982	612	1.924308	4.918496	0
613	1.987425	613	1.926803	3.829378	0
614	2.665824	614	1.929299	5.143173	0
615	4.409403	615	1.931795	8.518063	0
616	6.750971	616	1.934291	13.05834	1
617	9.063107	617	1.936787	17.5533	1
618	10.72628	618	1.939282	20.80128	1
619	11.29483	619	1.941778	21.93206	1
620	10.61643	620	1.944274	20.64126	1
621	8.872855	621	1.94677	17.27341	1
622	6.531287	622	1.949266	12.73121	1
623	4.219151	623	1.951761	8.234776	0
624	2.555982	624	1.954257	4.995047	0
625	1.987425	625	1.956753	3.8889	0
626	2.665824	626	1.959249	5.223013	0
627	4.409403	627	1.961745	8.650123	0
628	6.750971	628	1.96424	13.26053	1
629	9.063107	629	1.966736	17.82474	1
630	10.72628	630	1.969232	21.12253	1
631	11.29483	631	1.971728	22.27034	1
632	10.61643	632	1.974224	20.95921	1
633	8.872855	633	1.976719	17.53914	1
634	6.531287	634	1.979215	12.92682	1
635	4.219151	635	1.981711	8.361138	0
636	2.555982	636	1.984207	5.071598	0

637	1.987425	637	1.986703	3.948423	0
638	2.665824	638	1.989198	5.302854	0
639	4.409403	639	1.991694	8.782183	0
640	6.750971	640	1.99419	13.46272	1
641	9.063107	641	1.996686	18.09618	1
642	10.72628	642	1.999182	21.44377	1
643	11.29483	643	2.001677	22.60861	1
644	10.61643	644	2.004173	21.27717	1
645	8.872855	645	2.006669	17.80488	1
646	6.531287	646	2.009165	13.12243	1
647	4.219151	647	2.011661	8.4875	0
648	2.555982	648	2.014156	5.148148	0
649	1.987425	649	2.016652	4.007946	0
650	2.665824	650	2.019148	5.382694	0
651	4.409403	651	2.021644	8.914243	0
652	6.750971	652	2.02414	13.66491	1
653	9.063107	653	2.026635	18.36761	1
654	10.72628	654	2.029131	21.76502	1
655	11.29483	655	2.031627	22.94689	1
656	10.61643	656	2.034123	21.59513	1
657	8.872855	657	2.036619	18.07062	1
658	6.531287	658	2.039114	13.31804	1
659	4.219151	659	2.04161	8.613862	0
660	2.555982	660	2.044106	5.224699	0
661	1.987425	661	2.046602	4.067468	0

662	2.665824	662	2.049098	5.462534	0
663	4.409403	663	2.051593	9.046303	0
664	6.750971	664	2.054089	13.8671	1
665	9.063107	665	2.056585	18.63905	1
666	10.72628	666	2.059081	22.08627	1
667	11.29483	667	2.061577	23.28516	1
668	10.61643	668	2.064072	21.91309	1
669	8.872855	669	2.066568	18.33636	1
670	6.531287	670	2.069064	13.51365	1
671	4.219151	671	2.07156	8.740224	0
672	2.555982	672	2.074056	5.301249	0
673	1.987425	673	2.076551	4.126991	0
674	2.665824	674	2.079047	5.542375	0
675	4.409403	675	2.081543	9.178363	0
676	6.750971	676	2.084039	14.06929	1
677	9.063107	677	2.086535	18.91049	1
678	10.72628	678	2.08903	22.40752	1
679	11.29483	679	2.091526	23.62344	1
680	10.61643	680	2.094022	22.23105	1
681	8.872855	681	2.096518	18.6021	1
682	6.531287	682	2.099014	13.70926	1
683	4.219151	683	2.101509	8.866586	0
684	2.555982	684	2.104005	5.3778	0
685	1.987425	685	2.106501	4.186513	0
686	2.665824	686	2.108997	5.622215	0

687	4.409403	687	2.111493	9.310422	0
688	6.750971	688	2.113988	14.27147	1
689	9.063107	689	2.116484	19.18192	1
690	10.72628	690	2.11898	22.72876	1
691	11.29483	691	2.121476	23.96171	1
692	10.61643	692	2.123972	22.549	1
693	8.872855	693	2.126467	18.86784	1
694	6.531287	694	2.128963	13.90487	1
695	4.219151	695	2.131459	8.992948	0
696	2.555982	696	2.133955	5.454351	0
697	1.987425	697	2.136451	4.246036	0
698	2.665824	698	2.138946	5.702056	0
699	4.409403	699	2.141442	9.442482	0
700	6.750971	700	2.143938	14.47366	1
701	9.063107	701	2.146434	19.45336	1
702	10.72628	702	2.14893	23.05001	1
703	11.29483	703	2.151425	24.29999	1
704	10.61643	704	2.153921	22.86696	1
705	8.872855	705	2.156417	19.13358	1
706	6.531287	706	2.158913	14.10048	1
707	4.219151	707	2.161409	9.11931	0
708	2.555982	708	2.163904	5.530901	0
709	1.987425	709	2.1664	4.305559	0
710	2.665824	710	2.168896	5.781896	0
711	4.409403	711	2.171392	9.574542	0

712	6.750971	712	2.173888	14.67585	1
713	9.063107	713	2.176383	19.7248	1
714	10.72628	714	2.178879	23.37126	1
715	11.29483	715	2.181375	24.63827	1
716	10.61643	716	2.183871	23.18492	1
717	8.872855	717	2.186367	19.39931	1
718	6.531287	718	2.188862	14.29609	1
719	4.219151	719	2.191358	9.245672	0
720	2.555982	720	2.193854	5.607452	0
721	1.987425	721	2.19635	4.365081	0
722	2.665824	722	2.198846	5.861736	0
723	4.409403	723	2.201341	9.706602	0
724	6.750971	724	2.203837	14.87804	1
725	9.063107	725	2.206333	19.99623	1
726	10.72628	726	2.208829	23.69251	1
727	11.29483	727	2.211325	24.97654	1
728	10.61643	728	2.21382	23.50288	1
729	8.872855	729	2.216316	19.66505	1
730	6.531287	730	2.218812	14.4917	1
731	4.219151	731	2.221308	9.372033	0
732	2.555982	732	2.223804	5.684003	0
733	1.987425	733	2.226299	4.424604	0
734	2.665824	734	2.228795	5.941577	0
735	4.409403	735	2.231291	9.838662	0
736	6.750971	736	2.233787	15.08023	1

737	9.063107	737	2.236283	20.26767	1
738	10.72628	738	2.238778	24.01375	1
739	11.29483	739	2.241274	25.31482	1
740	10.61643	740	2.24377	23.82084	1
741	8.872855	741	2.246266	19.93079	1
742	6.531287	742	2.248762	14.68731	1
743	4.219151	743	2.251257	9.498395	0
744	2.555982	744	2.253753	5.760553	0
745	1.987425	745	2.256249	4.484126	0
746	2.665824	746	2.258745	6.021417	0
747	4.409403	747	2.261241	9.970722	0
748	6.750971	748	2.263736	15.28242	1
749	9.063107	749	2.266232	20.53911	1
750	10.72628	750	2.268728	24.335	1
751	11.29483	751	2.271224	25.65309	1
752	10.61643	752	2.27372	24.13879	1
753	8.872855	753	2.276215	20.19653	1
754	6.531287	754	2.278711	14.88292	1
755	4.219151	755	2.281207	9.624757	0
756	2.555982	756	2.283703	5.837104	0
757	1.987425	757	2.286199	4.543649	0
758	2.665824	758	2.288694	6.101257	0
759	4.409403	759	2.29119	10.10278	0
760	6.750971	760	2.293686	15.48461	1
761	9.063107	761	2.296182	20.81054	1

762	10.72628	762	2.298678	24.65625	1
763	11.29483	763	2.301173	25.99137	1
764	10.61643	764	2.303669	24.45675	1
765	8.872855	765	2.306165	20.46227	1
766	6.531287	766	2.308661	15.07853	1
767	4.219151	767	2.311157	9.751119	0
768	2.555982	768	2.313652	5.913655	0
769	1.987425	769	2.316148	4.603171	0
770	2.665824	770	2.318644	6.181098	0
771	4.409403	771	2.32114	10.23484	0
772	6.750971	772	2.323636	15.6868	1
773	9.063107	773	2.326131	21.08198	1
774	10.72628	774	2.328627	24.9775	1
775	11.29483	775	2.331123	26.32965	1
776	10.61643	776	2.333619	24.77471	1
777	8.872855	777	2.336115	20.72801	1
778	6.531287	778	2.33861	15.27414	1
779	4.219151	779	2.341106	9.877481	0
780	2.555982	780	2.343602	5.990205	0
781	1.987425	781	2.346098	4.662694	0
782	2.665824	782	2.348594	6.260938	0
783	4.409403	783	2.351089	10.3669	0
784	6.750971	784	2.353585	15.88899	1
785	9.063107	785	2.356081	21.35341	1
786	10.72628	786	2.358577	25.29875	1

787	11.29483	787	2.361073	26.66792	1
788	10.61643	788	2.363568	25.09267	1
789	8.872855	789	2.366064	20.99374	1
790	6.531287	790	2.36856	15.46975	1
791	4.219151	791	2.371056	10.00384	0
792	2.555982	792	2.373552	6.066756	0
793	1.987425	793	2.376047	4.722217	0
794	2.665824	794	2.378543	6.340779	0
795	4.409403	795	2.381039	10.49896	0
796	6.750971	796	2.383535	16.09117	1
797	9.063107	797	2.386031	21.62485	1
798	10.72628	798	2.388526	25.61999	1
799	11.29483	799	2.391022	27.0062	1
800	10.61643	800	2.393518	25.41063	1
801	8.872855	801	2.396014	21.25948	1
802	6.531287	802	2.39851	15.66535	1
803	4.219151	803	2.401005	10.1302	0
804	2.555982	804	2.403501	6.143307	0
805	1.987425	805	2.405997	4.781739	0
806	2.665824	806	2.408493	6.420619	0
807	4.409403	807	2.410989	10.63102	0
808	6.750971	808	2.413484	16.29336	1
809	9.063107	809	2.41598	21.89629	1
810	10.72628	810	2.418476	25.94124	1
811	11.29483	811	2.420972	27.34447	1

812	10.61643	812	2.423468	25.72858	1
813	8.872855	813	2.425963	21.52522	1
814	6.531287	814	2.428459	15.86096	1
815	4.219151	815	2.430955	10.25657	0
816	2.555982	816	2.433451	6.219857	0
817	1.987425	817	2.435947	4.841262	0
818	2.665824	818	2.438442	6.500459	0
819	4.409403	819	2.440938	10.76308	0
820	6.750971	820	2.443434	16.49555	1
821	9.063107	821	2.44593	22.16772	1
822	10.72628	822	2.448426	26.26249	1
823	11.29483	823	2.450921	27.68275	1
824	10.61643	824	2.453417	26.04654	1
825	8.872855	825	2.455913	21.79096	1
826	6.531287	826	2.458409	16.05657	1
827	4.219151	827	2.460905	10.38293	0

This will continue all the way to eternity if efficient attention is not paid to the environmental issue.

Your reply will be highly appreciated!

Happy Thanks Giving Day!

Wang Ying

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