

Test 1

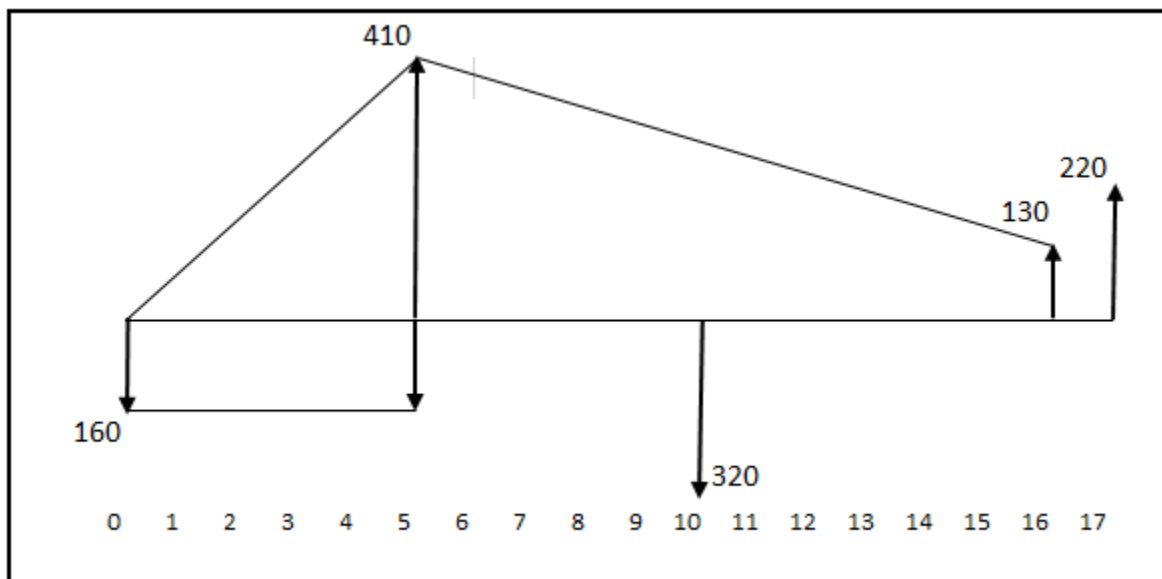
100 Points

Time: 100 Minutes (+ 10 if work needs to be completed)

Explain and show your work. No use of computer or cell phone allowed. Use of printed attached tables for indicated interests is only allowed. Write your name on sheets of paper you have and turn them in at the end of the test time.

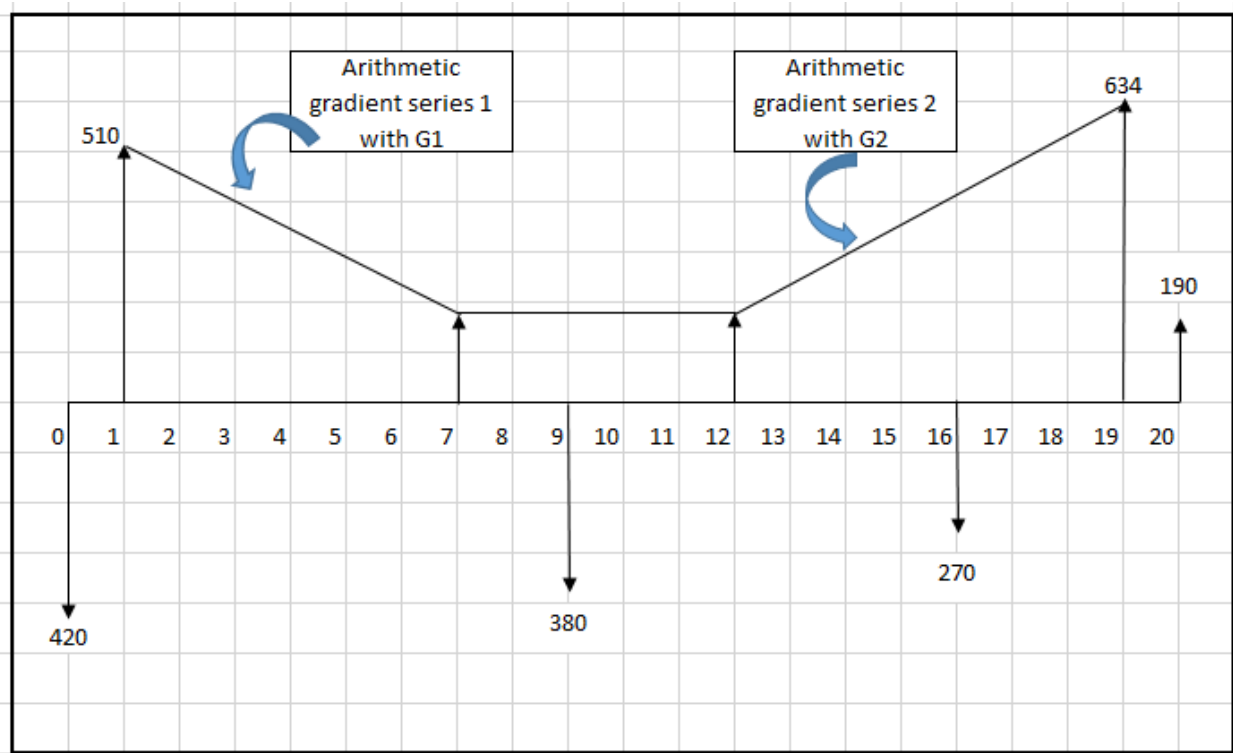
PROBLEM 1:

Calculate the equivalent annuity of the following cash that begins from the end of year 6 and ends at the end of year 13. Annual compounding and use Table 1. (30 pts)



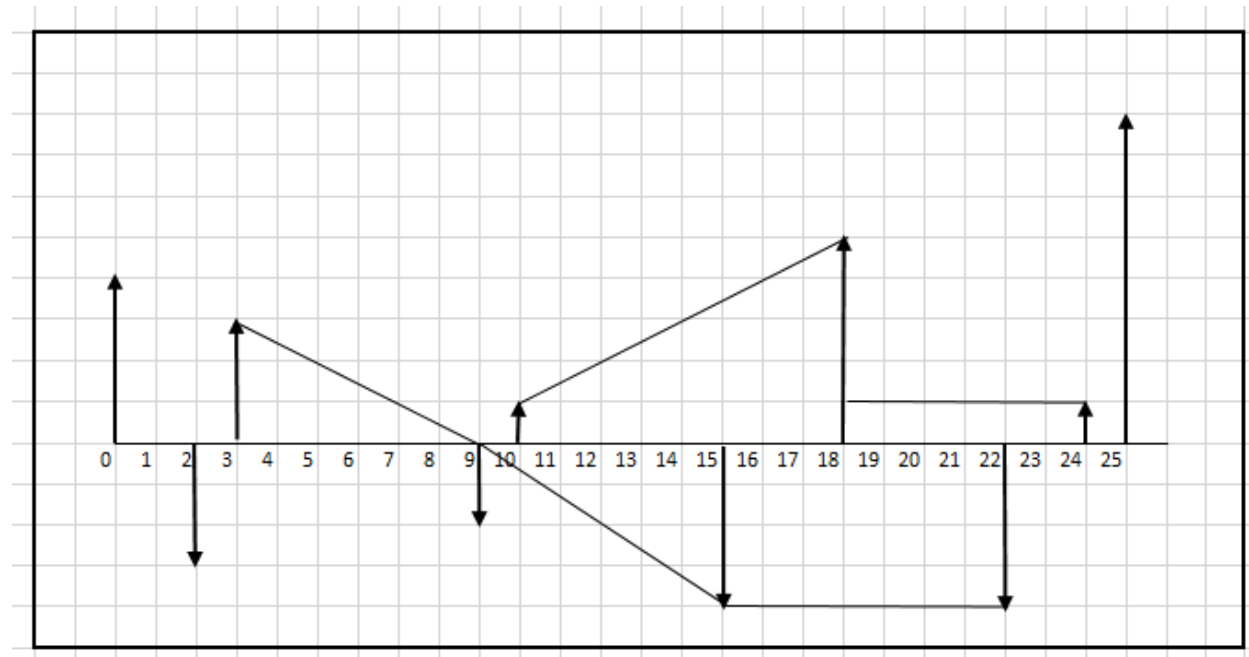
PROBLEM 2:

Given the cash flow and for the interest rate in Table 2, compounded annually, calculate G1 and G2 if the present worth of the project is \$1880.93 and the combined values of the gradients is \$100. (40 pts)



PROBLEM 3:

Calculate the future value of the following cash flow at year 21. For factors use table 2 from beginning of year 13 through end of year 18 and everywhere else use table 1. Each grid size is \$100 and all transactions are at exact grid sizes. For example, payment at year 0 is 4 grid sizes so \$400. (30 pts)



9%	Compound Interest Factors								9%
<i>n</i>	Single Payment		Uniform Payment Series				Arithmetic Gradient		<i>n</i>
	Compound Amount Factor Find <i>F</i> Given <i>P</i> <i>F/P</i>	Present Worth Factor Find <i>P</i> Given <i>F</i> <i>P/F</i>	Sinking Fund Factor Find <i>A</i> Given <i>F</i> <i>A/F</i>	Capital Recovery Factor Find <i>A</i> Given <i>P</i> <i>A/P</i>	Compound Amount Factor Find <i>F</i> Given <i>A</i> <i>F/A</i>	Present Worth Factor Find <i>P</i> Given <i>A</i> <i>P/A</i>	Gradient Uniform Series Find <i>A</i> Given <i>G</i> <i>A/G</i>	Gradient Present Worth Find <i>P</i> Given <i>G</i> <i>P/G</i>	
1	1.090	.9174	1.0000	1.0900	1.000	0.917	0	0	1
2	1.188	.8417	.4785	.5685	2.090	1.759	0.478	0.842	2
3	1.295	.7722	.3051	.3951	3.278	2.531	0.943	2.386	3
4	1.412	.7084	.2187	.3087	4.573	3.240	1.393	4.511	4
5	1.539	.6499	.1671	.2571	5.985	3.890	1.828	7.111	5
6	1.677	.5963	.1329	.2229	7.523	4.486	2.250	10.092	6
7	1.828	.5470	.1087	.1987	9.200	5.033	2.657	13.375	7
8	1.993	.5019	.0907	.1807	11.028	5.535	3.051	16.888	8
9	2.172	.4604	.0768	.1668	13.021	5.995	3.431	20.571	9
10	2.367	.4224	.0658	.1558	15.193	6.418	3.798	24.373	10
11	2.580	.3875	.0569	.1469	17.560	6.805	4.151	28.248	11
12	2.813	.3555	.0497	.1397	20.141	7.161	4.491	32.159	12
13	3.066	.3262	.0436	.1336	22.953	7.487	4.818	36.073	13
14	3.342	.2992	.0384	.1284	26.019	7.786	5.133	39.963	14
15	3.642	.2745	.0341	.1241	29.361	8.061	5.435	43.807	15
16	3.970	.2519	.0303	.1203	33.003	8.313	5.724	47.585	16
17	4.328	.2311	.0270	.1170	36.974	8.544	6.002	51.282	17
18	4.717	.2120	.0242	.1142	41.301	8.756	6.269	54.886	18
19	5.142	.1945	.0217	.1117	46.019	8.950	6.524	58.387	19
20	5.604	.1784	.0195	.1095	51.160	9.129	6.767	61.777	20
21	6.109	.1637	.0176	.1076	56.765	9.292	7.001	65.051	21
22	6.659	.1502	.0159	.1059	62.873	9.442	7.223	68.205	22
23	7.258	.1378	.0144	.1044	69.532	9.580	7.436	71.236	23
24	7.911	.1264	.0130	.1030	76.790	9.707	7.638	74.143	24
25	8.623	.1160	.0118	.1018	84.701	9.823	7.832	76.927	25
26	9.399	.1064	.0107	.1007	93.324	9.929	8.016	79.586	26
27	10.245	.0976	.00973	.0997	102.723	10.027	8.191	82.124	27
28	11.167	.0895	.00885	.0989	112.968	10.116	8.357	84.542	28
29	12.172	.0822	.00806	.0981	124.136	10.198	8.515	86.842	29
30	13.268	.0754	.00734	.0973	136.308	10.274	8.666	89.028	30
31	14.462	.0691	.00669	.0967	149.575	10.343	8.808	91.102	31
32	15.763	.0634	.00610	.0961	164.037	10.406	8.944	93.069	32
33	17.182	.0582	.00556	.0956	179.801	10.464	9.072	94.931	33
34	18.728	.0534	.00508	.0951	196.983	10.518	9.193	96.693	34
35	20.414	.0490	.00464	.0946	215.711	10.567	9.308	98.359	35
40	31.409	.0318	.00296	.0930	337.883	10.757	9.796	105.376	40
45	48.327	.0207	.00190	.0919	525.860	10.881	10.160	110.556	45
50	74.358	.0134	.00123	.0912	815.085	10.962	10.430	114.325	50
55	114.409	.00874	.00079	.0908	1260.1	11.014	10.626	117.036	55
60	176.032	.00568	.00051	.0905	1944.8	11.048	10.768	118.968	60
65	270.847	.00369	.00033	.0903	2998.3	11.070	10.870	120.334	65
70	416.731	.00240	.00022	.0902	4619.2	11.084	10.943	121.294	70
75	641.193	.00156	.00014	.0901	7113.3	11.094	10.994	121.965	75
80	986.555	.00101	.00009	.0901	10950.6	11.100	11.030	122.431	80
85	1517.9	.00066	.00006	.0901	16854.9	11.104	11.055	122.753	85
90	2335.5	.00043	.00004	.0900	25939.3	11.106	11.073	122.976	90
95	3593.5	.00028	.00003	.0900	39916.8	11.108	11.085	123.129	95
100	5529.1	.00018	.00002	.0900	61422.9	11.109	11.093	123.233	100

12% Compound Interest Factors 12%									
n	Single Payment		Uniform Payment Series				Arithmetic Gradient		n
	Compound Amount Factor Find F Given P F/P	Present Worth Factor Find P Given F P/F	Sinking Fund Factor Find A Given F A/F	Capital Recovery Factor Find A Given P A/P	Compound Amount Factor Find F Given A F/A	Present Worth Factor Find P Given A P/A	Gradient Uniform Series Find A Given G A/G	Gradient Present Worth Find P Given G P/G	
1	1.120	.8929	1.0000	1.1200	1.000	0.893	0	0	1
2	1.254	.7972	.4717	.5917	2.120	1.690	0.472	0.797	2
3	1.405	.7118	.2963	.4163	3.374	2.402	0.925	2.221	3
4	1.574	.6355	.2092	.3292	4.779	3.037	1.359	4.127	4
5	1.762	.5674	.1574	.2774	6.353	3.605	1.775	6.397	5
6	1.974	.5066	.1232	.2432	8.115	4.111	2.172	8.930	6
7	2.211	.4523	.0991	.2191	10.089	4.564	2.551	11.644	7
8	2.476	.4039	.0813	.2013	12.300	4.968	2.913	14.471	8
9	2.773	.3606	.0677	.1877	14.776	5.328	3.257	17.356	9
10	3.106	.3220	.0570	.1770	17.549	5.650	3.585	20.254	10
11	3.479	.2875	.0484	.1684	20.655	5.938	3.895	23.129	11
12	3.896	.2567	.0414	.1614	24.133	6.194	4.190	25.952	12
13	4.363	.2292	.0357	.1557	28.029	6.424	4.468	28.702	13
14	4.887	.2046	.0309	.1509	32.393	6.628	4.732	31.362	14
15	5.474	.1827	.0268	.1468	37.280	6.811	4.980	33.920	15
16	6.130	.1631	.0234	.1434	42.753	6.974	5.215	36.367	16
17	6.866	.1456	.0205	.1405	48.884	7.120	5.435	38.697	17
18	7.690	.1300	.0179	.1379	55.750	7.250	5.643	40.908	18
19	8.613	.1161	.0158	.1358	63.440	7.366	5.838	42.998	19
20	9.646	.1037	.0139	.1339	72.052	7.469	6.020	44.968	20
21	10.804	.0926	.0122	.1322	81.699	7.562	6.191	46.819	21
22	12.100	.0826	.0108	.1308	92.503	7.645	6.351	48.554	22
23	13.552	.0738	.00956	.1296	104.603	7.718	6.501	50.178	23
24	15.179	.0659	.00846	.1285	118.155	7.784	6.641	51.693	24
25	17.000	.0588	.00750	.1275	133.334	7.843	6.771	53.105	25
26	19.040	.0525	.00665	.1267	150.334	7.896	6.892	54.418	26
27	21.325	.0469	.00590	.1259	169.374	7.943	7.005	55.637	27
28	23.884	.0419	.00524	.1252	190.699	7.984	7.110	56.767	28
29	26.750	.0374	.00466	.1247	214.583	8.022	7.207	57.814	29
30	29.960	.0334	.00414	.1241	241.333	8.055	7.297	58.782	30
31	33.555	.0298	.00369	.1237	271.293	8.085	7.381	59.676	31
32	37.582	.0266	.00328	.1233	304.848	8.112	7.459	60.501	32
33	42.092	.0238	.00292	.1229	342.429	8.135	7.530	61.261	33
34	47.143	.0212	.00260	.1226	384.521	8.157	7.596	61.961	34
35	52.800	.0189	.00232	.1223	431.663	8.176	7.658	62.605	35
40	93.051	.0107	.00130	.1213	767.091	8.244	7.899	65.116	40
45	163.988	.00610	.00074	.1207	1358.2	8.283	8.057	66.734	45
50	289.002	.00346	.00042	.1204	2400.0	8.304	8.160	67.762	50
55	509.321	.00196	.00024	.1202	4236.0	8.317	8.225	68.408	55
60	897.597	.00111	.00013	.1201	7471.6	8.324	8.266	68.810	60
65	1581.9	.00063	.00008	.1201	13173.9	8.328	8.292	69.058	65
70	2787.8	.00036	.00004	.1200	23223.3	8.330	8.308	69.210	70
75	4913.1	.00020	.00002	.1200	40933.8	8.332	8.318	69.303	75
80	8658.5	.00012	.00001	.1200	72145.7	8.332	8.324	69.359	80
85	15259.2	.00007	.00001	.1200	127151.7	8.333	8.328	69.393	85
90	26891.9	.00004		.1200	224091.1	8.333	8.330	69.414	90
95	47392.8	.00002		.1200	394931.4	8.333	8.331	69.426	95
100	83522.3	.00001		.1200	696010.5	8.333	8.332	69.434	100