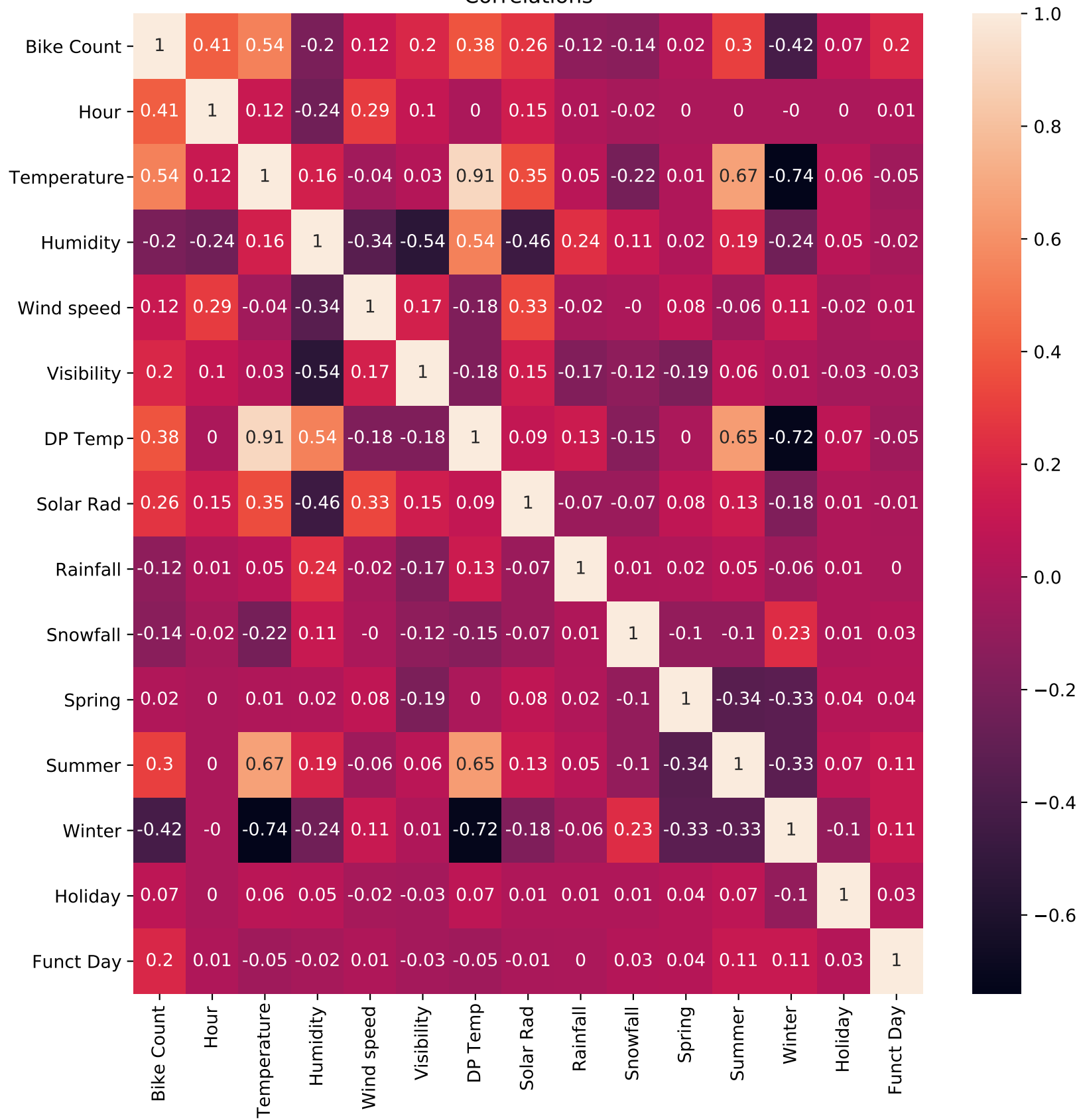
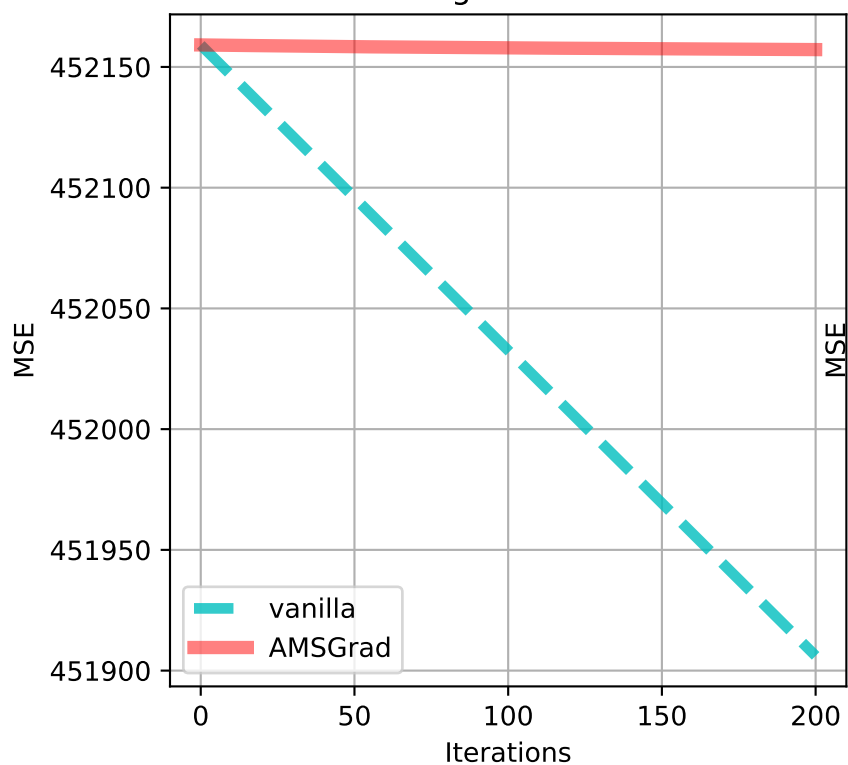


Correlations

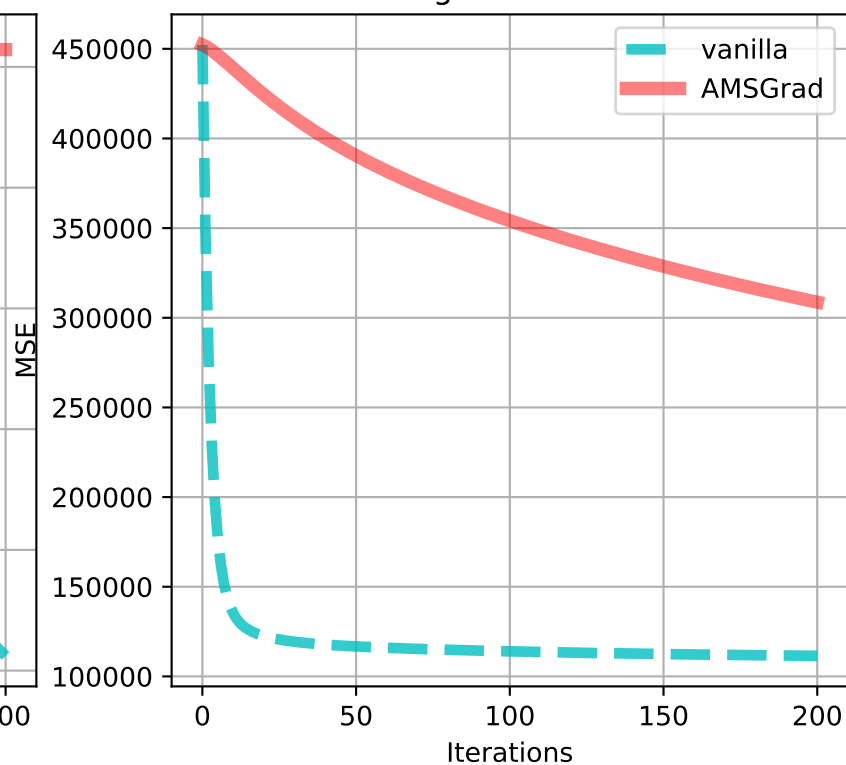


# Historical MSE vs Iterations

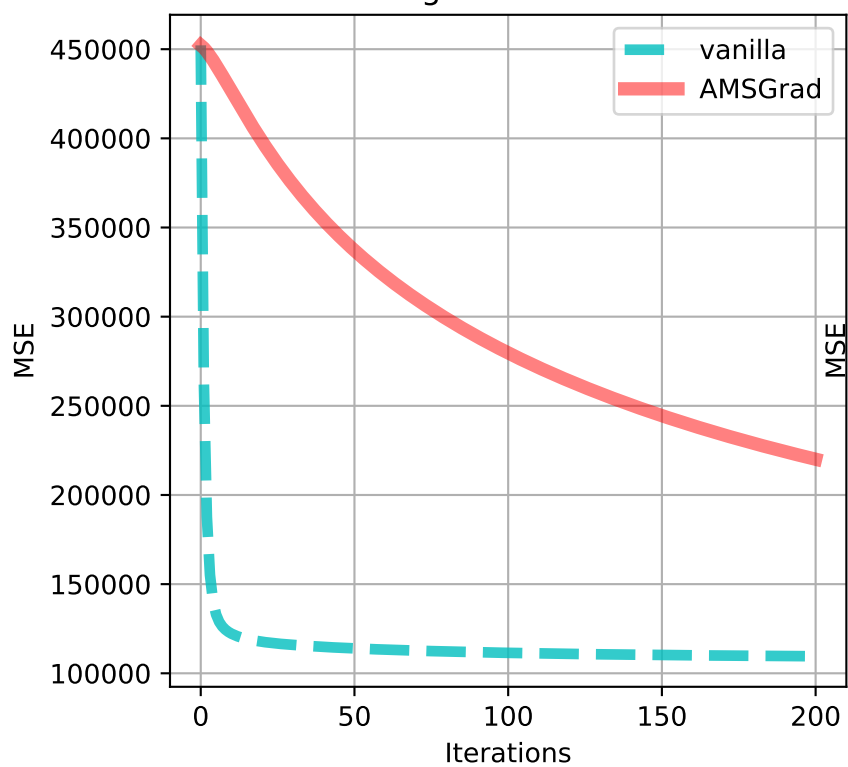
Learning rate = 1e-06



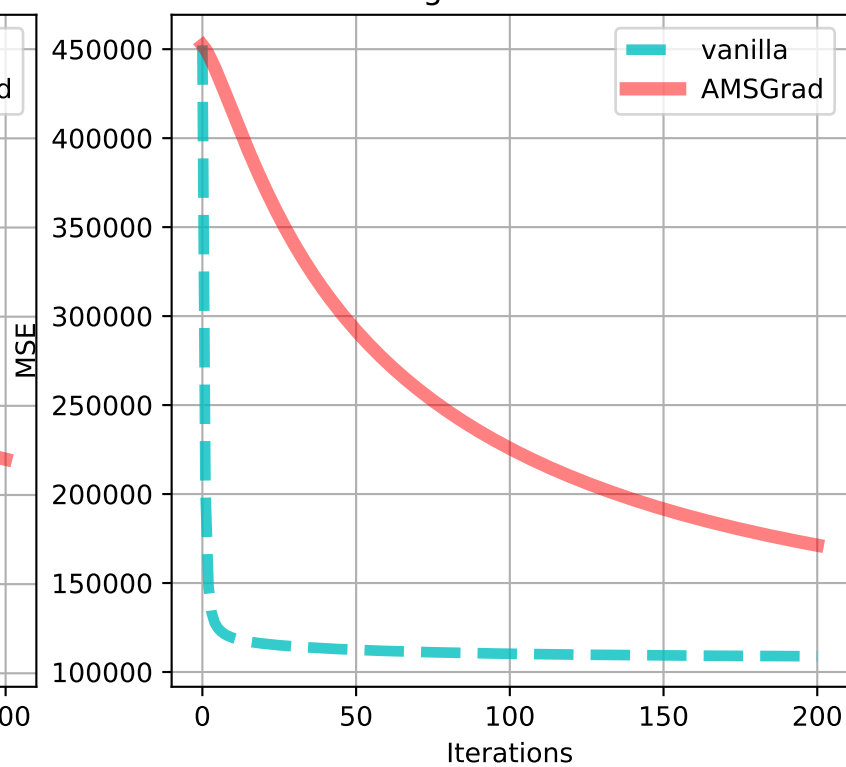
Learning rate = 0.09091



Learning rate = 0.181819

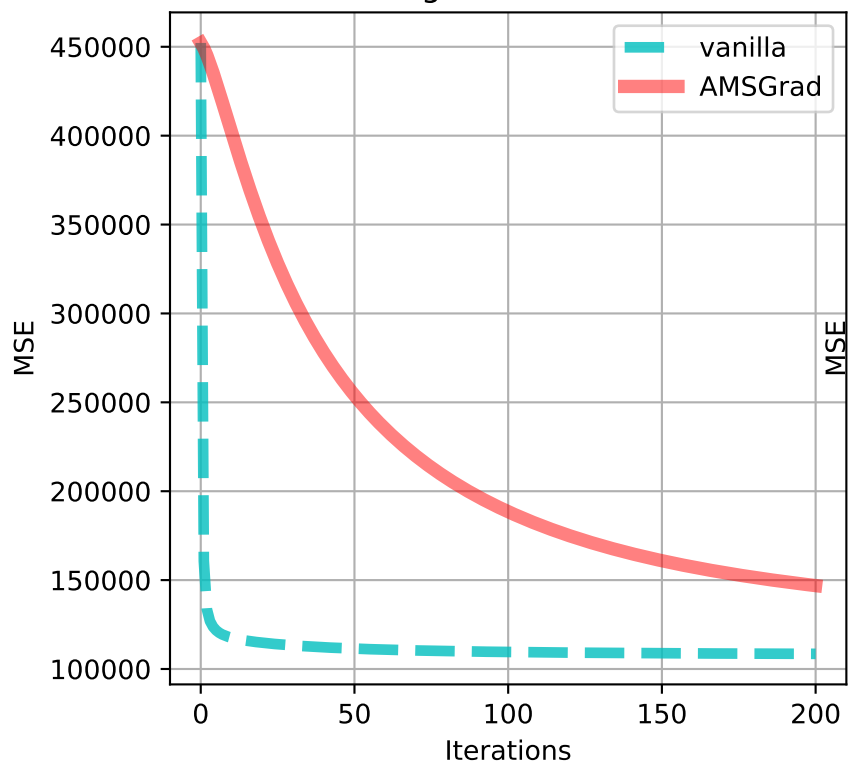


Learning rate = 0.272728

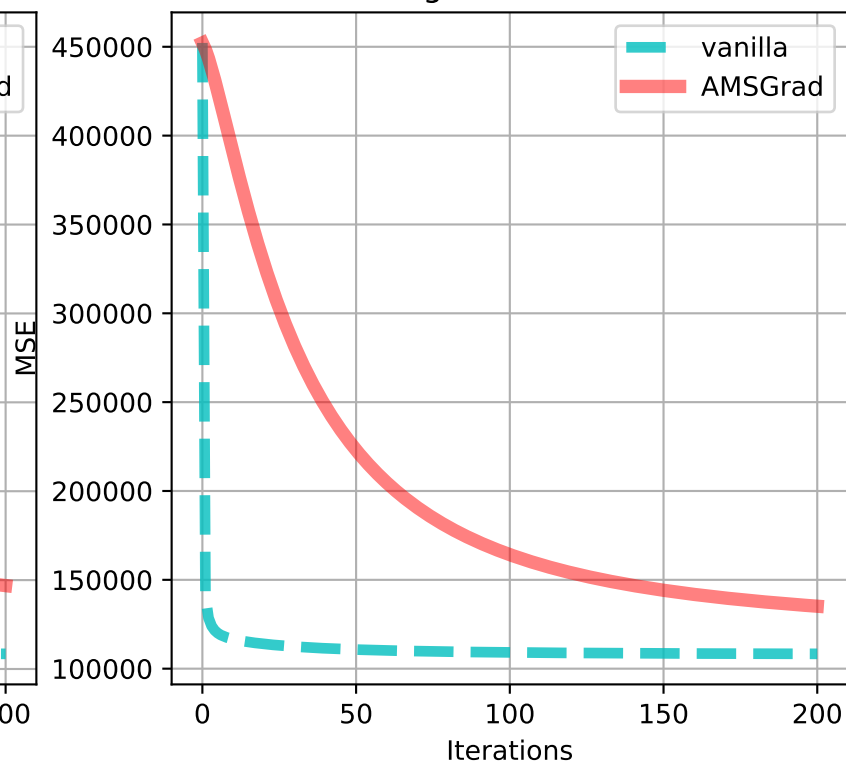


# Historical MSE vs Iterations

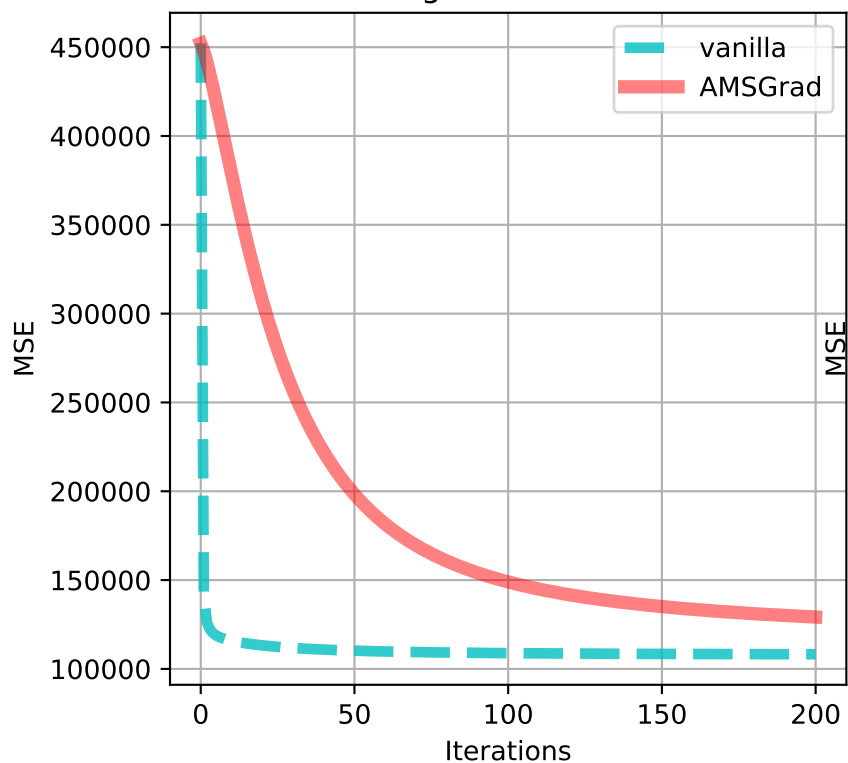
Learning rate = 0.363637



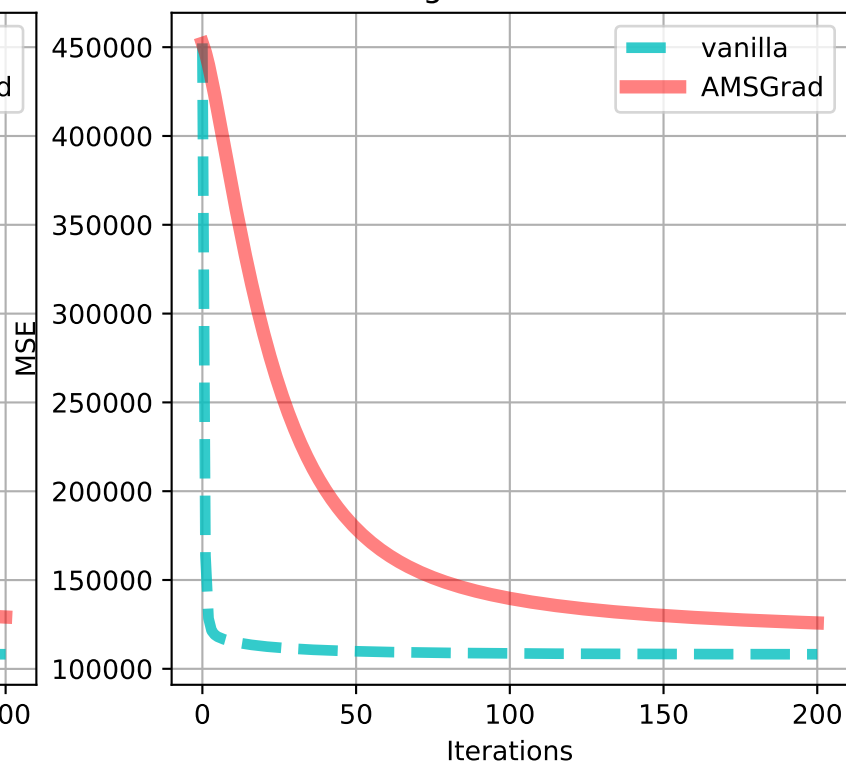
Learning rate = 0.454546



Learning rate = 0.545455

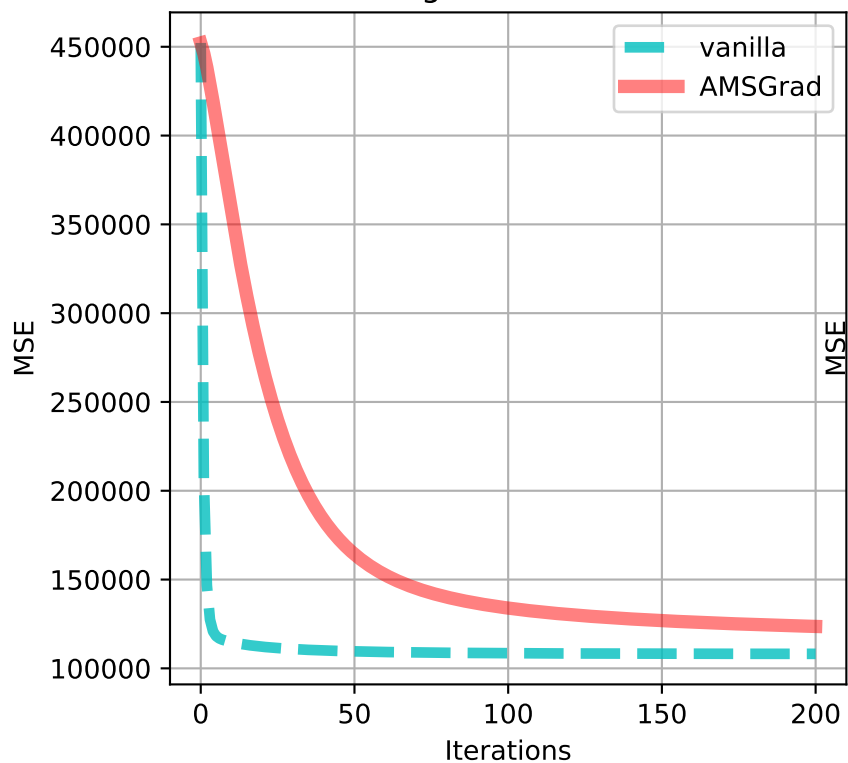


Learning rate = 0.636364

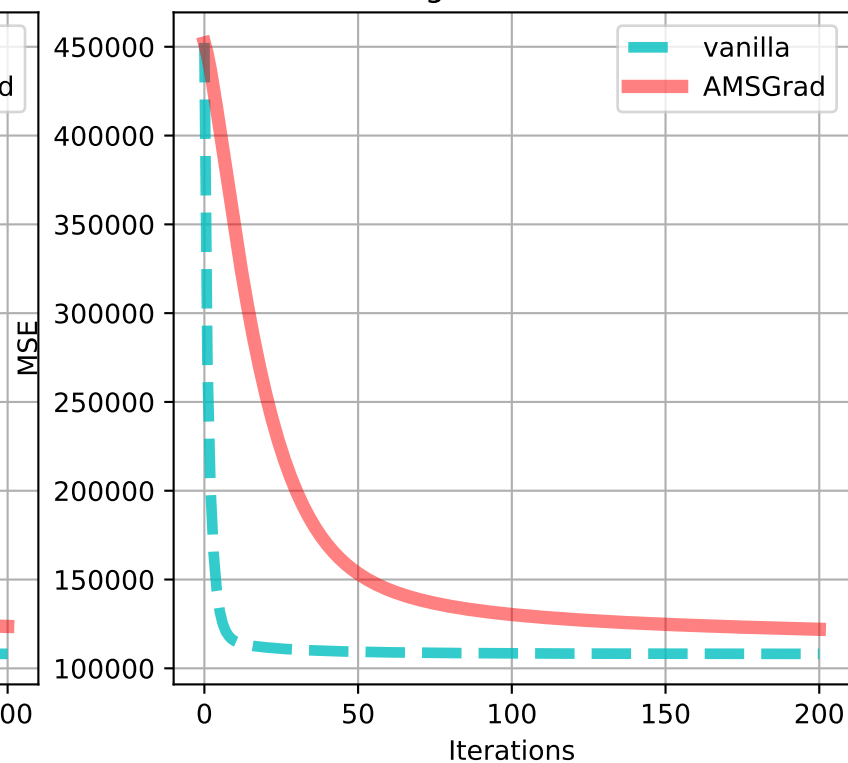


# Historical MSE vs Iterations

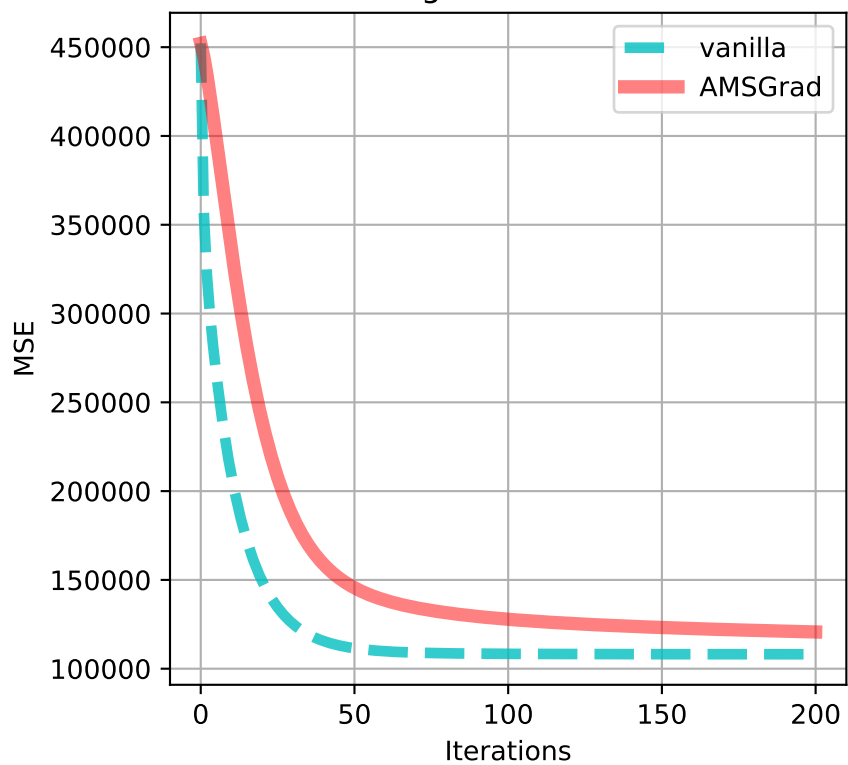
Learning rate = 0.727273



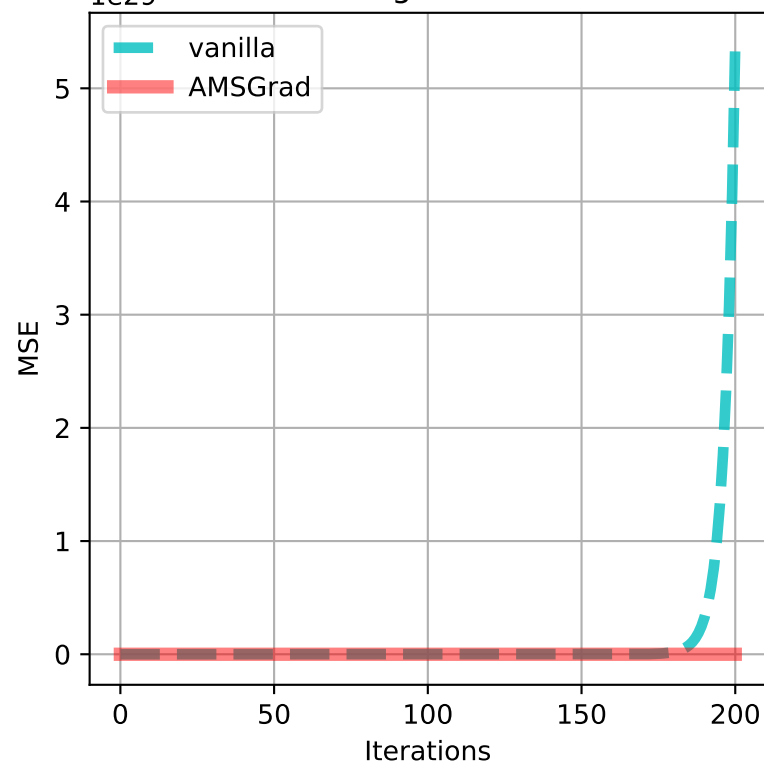
Learning rate = 0.818182

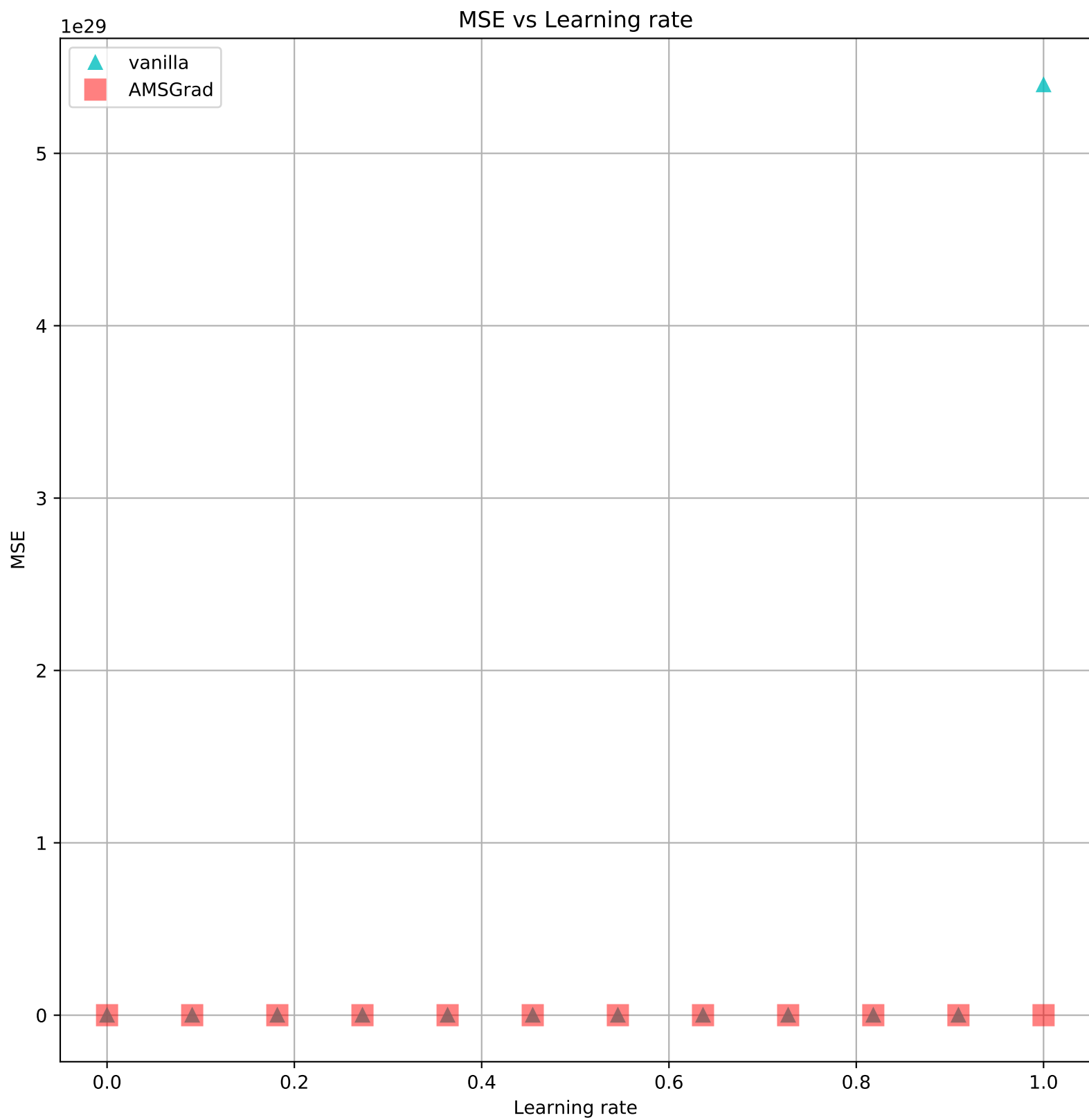


Learning rate = 0.909091



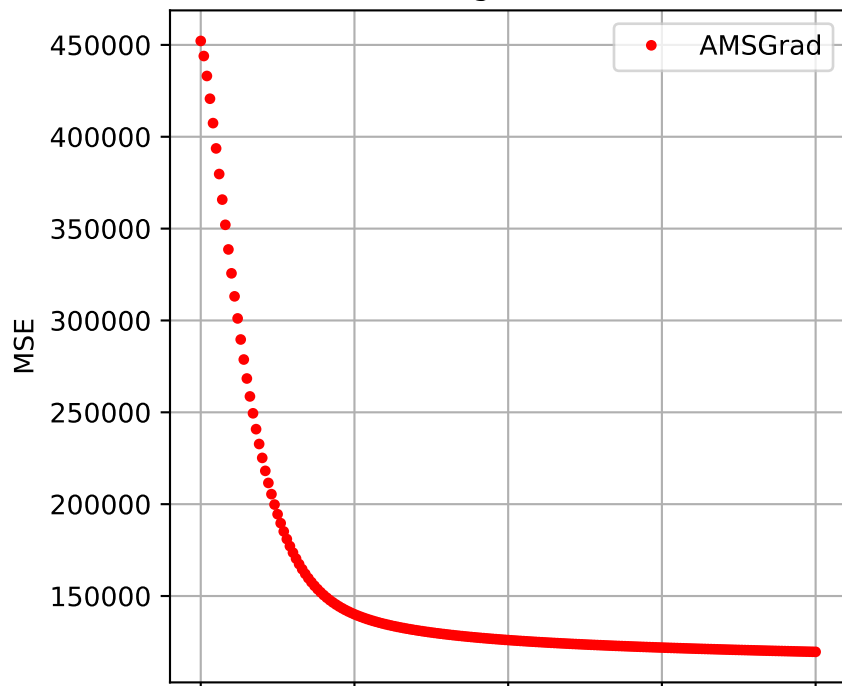
Learning rate = 1.0



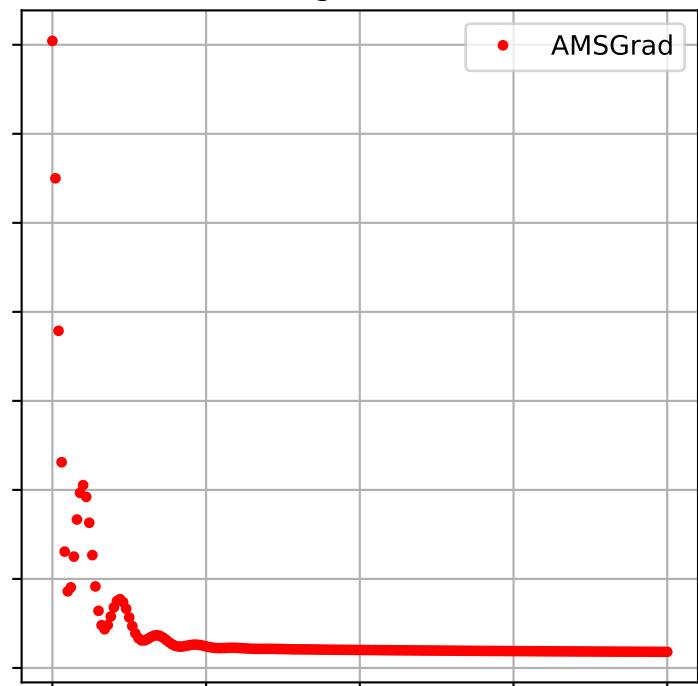


# Historical MSE vs Iterations

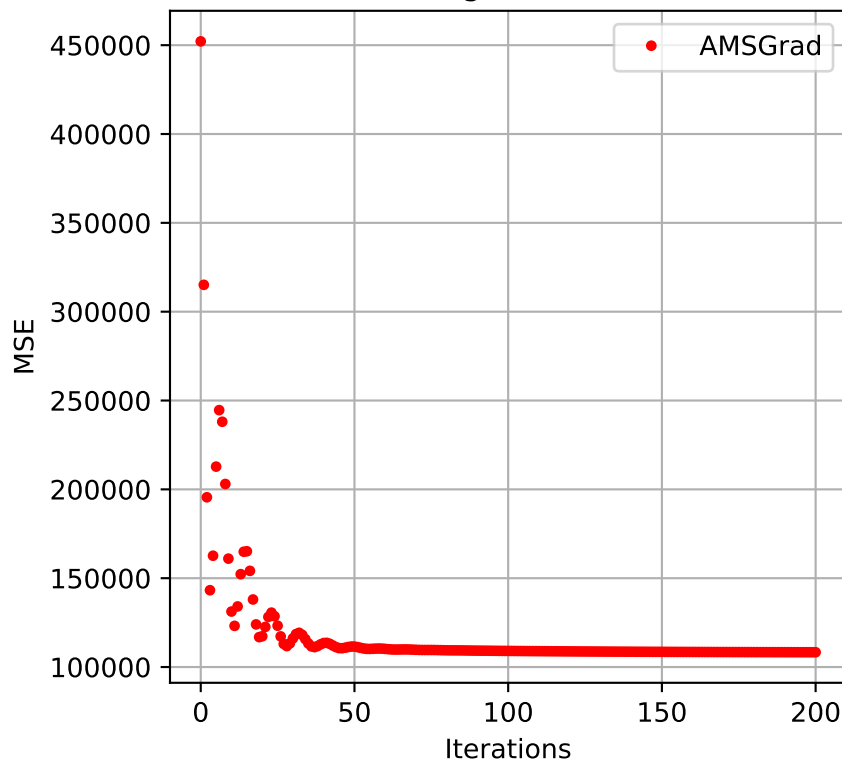
Learning rate = 1.0



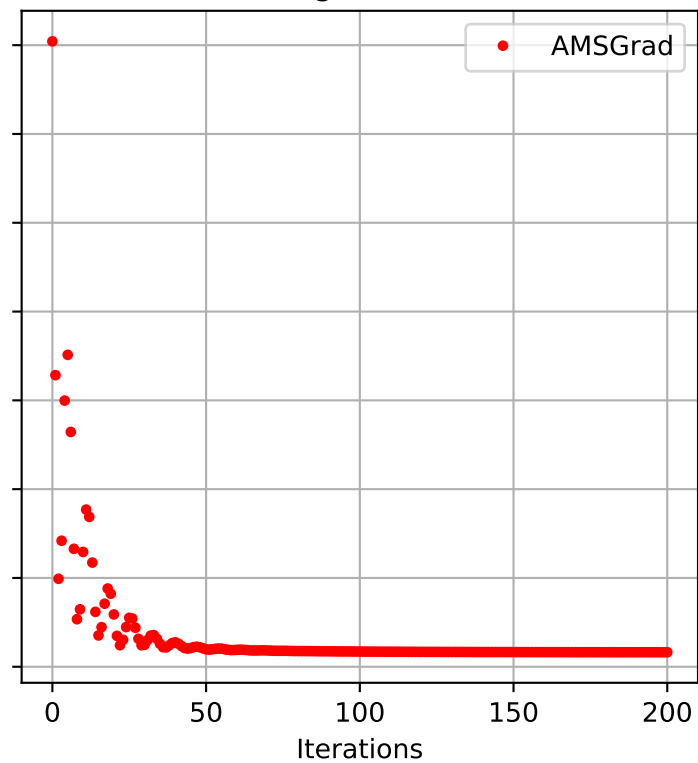
Learning rate = 10.0



Learning rate = 19.0

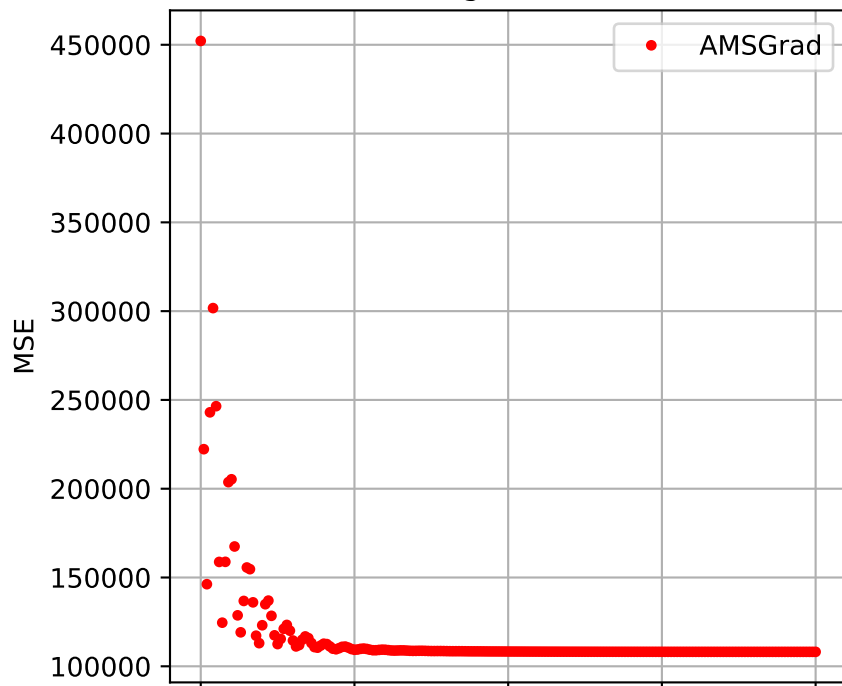


Learning rate = 28.0

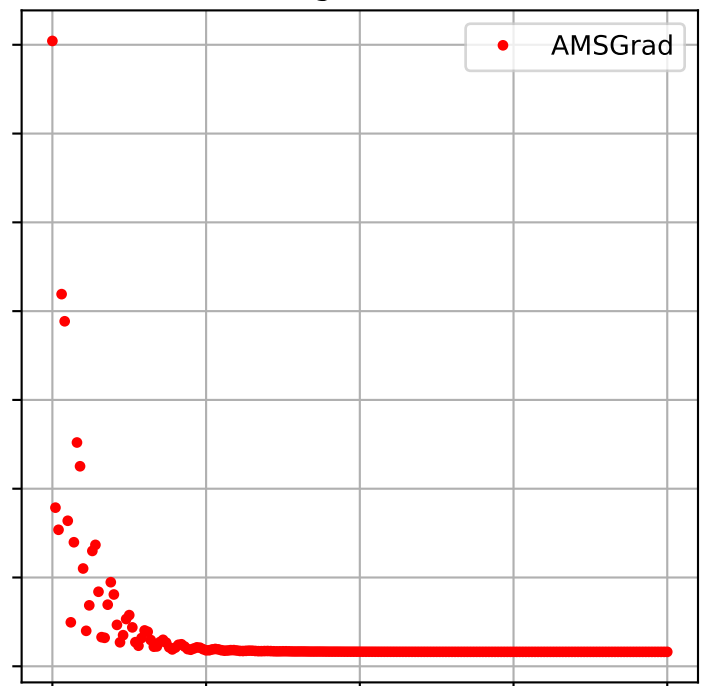


# Historical MSE vs Iterations

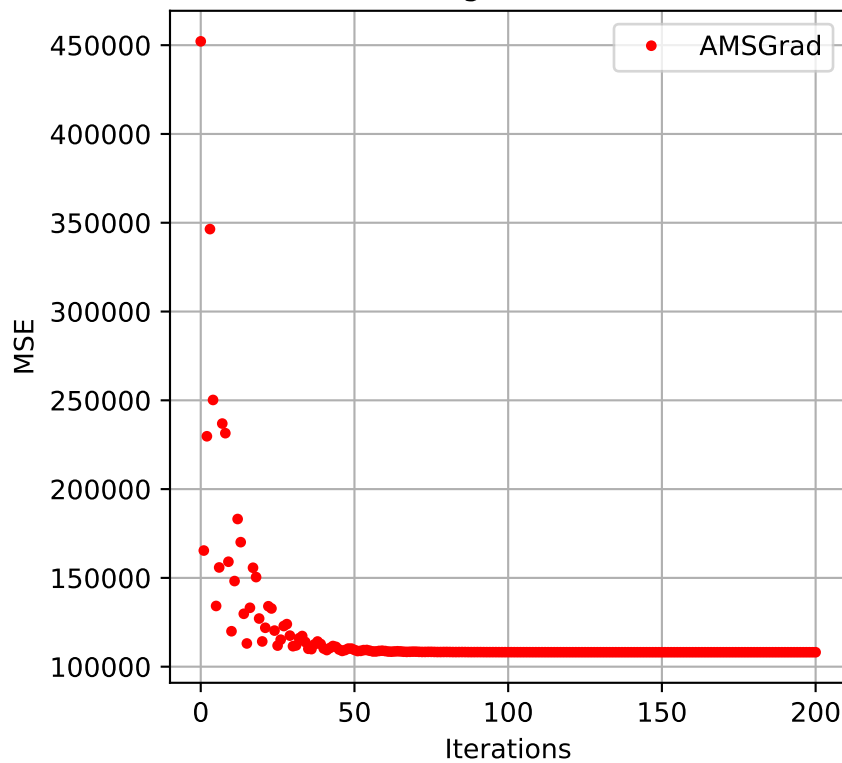
Learning rate = 37.0



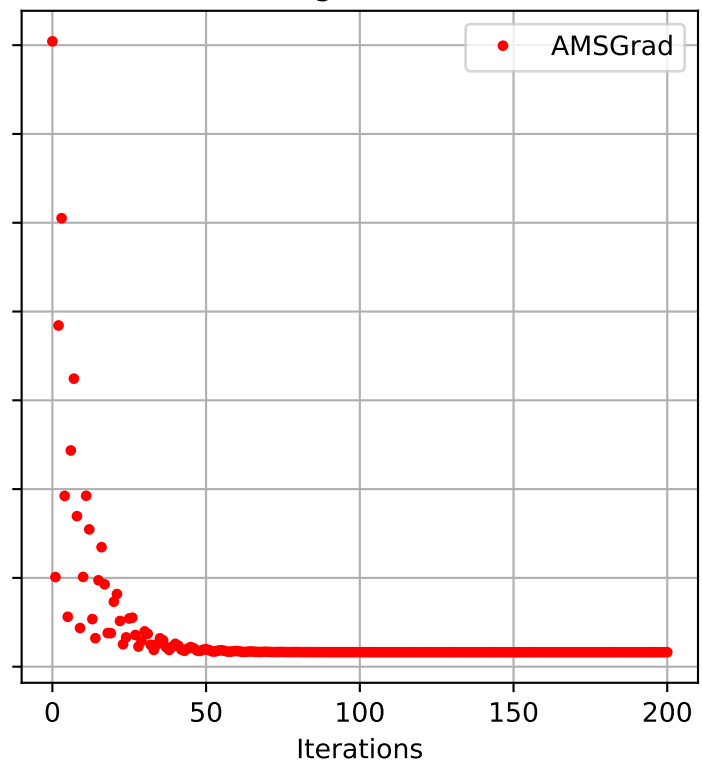
Learning rate = 46.0



Learning rate = 55.0

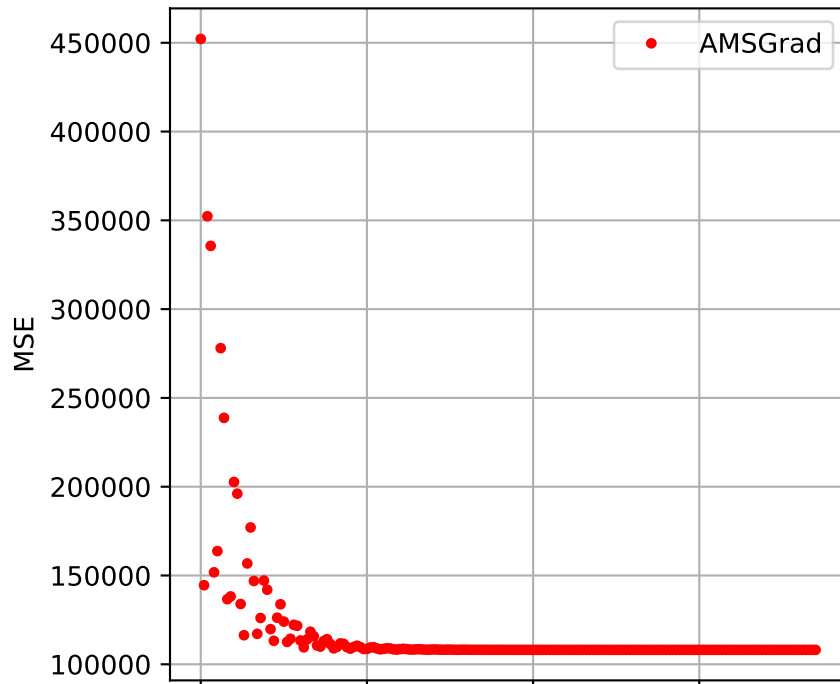


Learning rate = 64.0

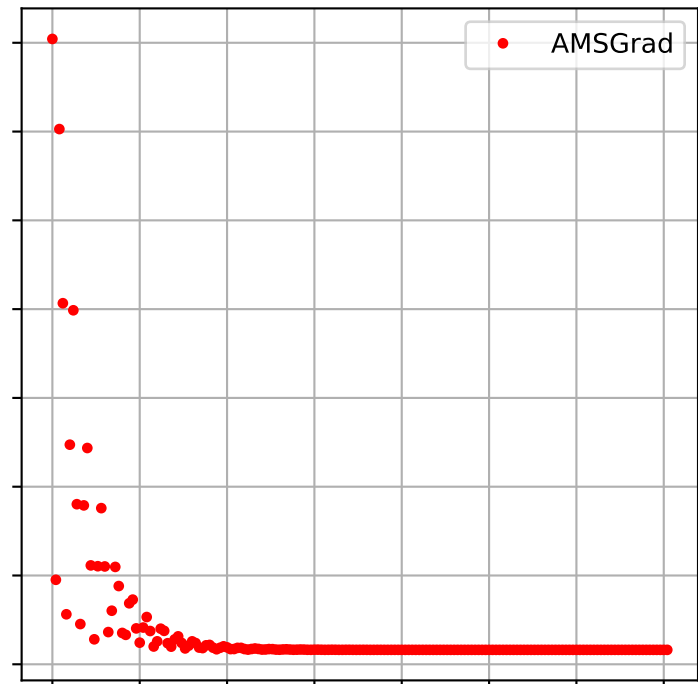


# Historical MSE vs Iterations

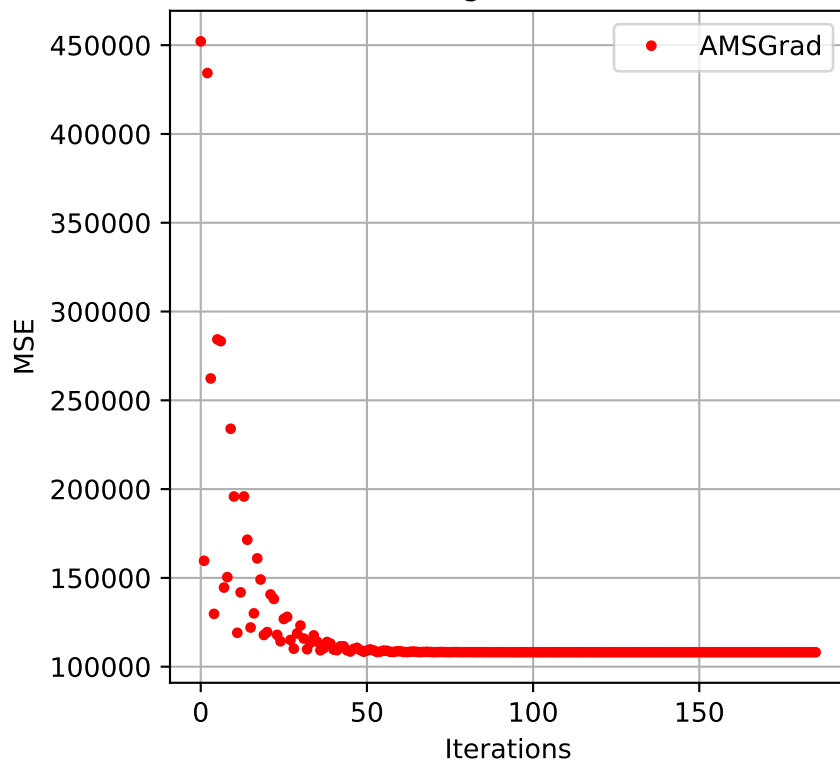
Learning rate = 73.0



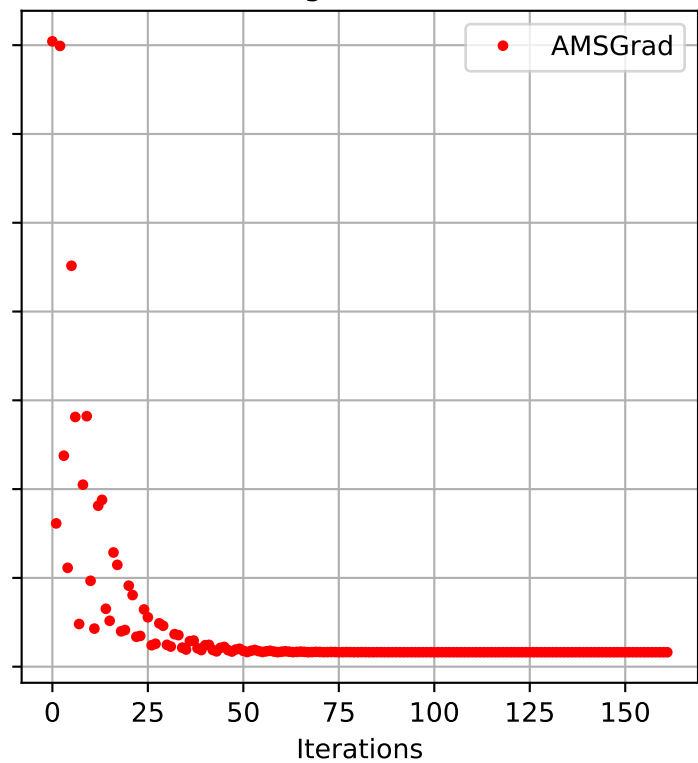
Learning rate = 82.0



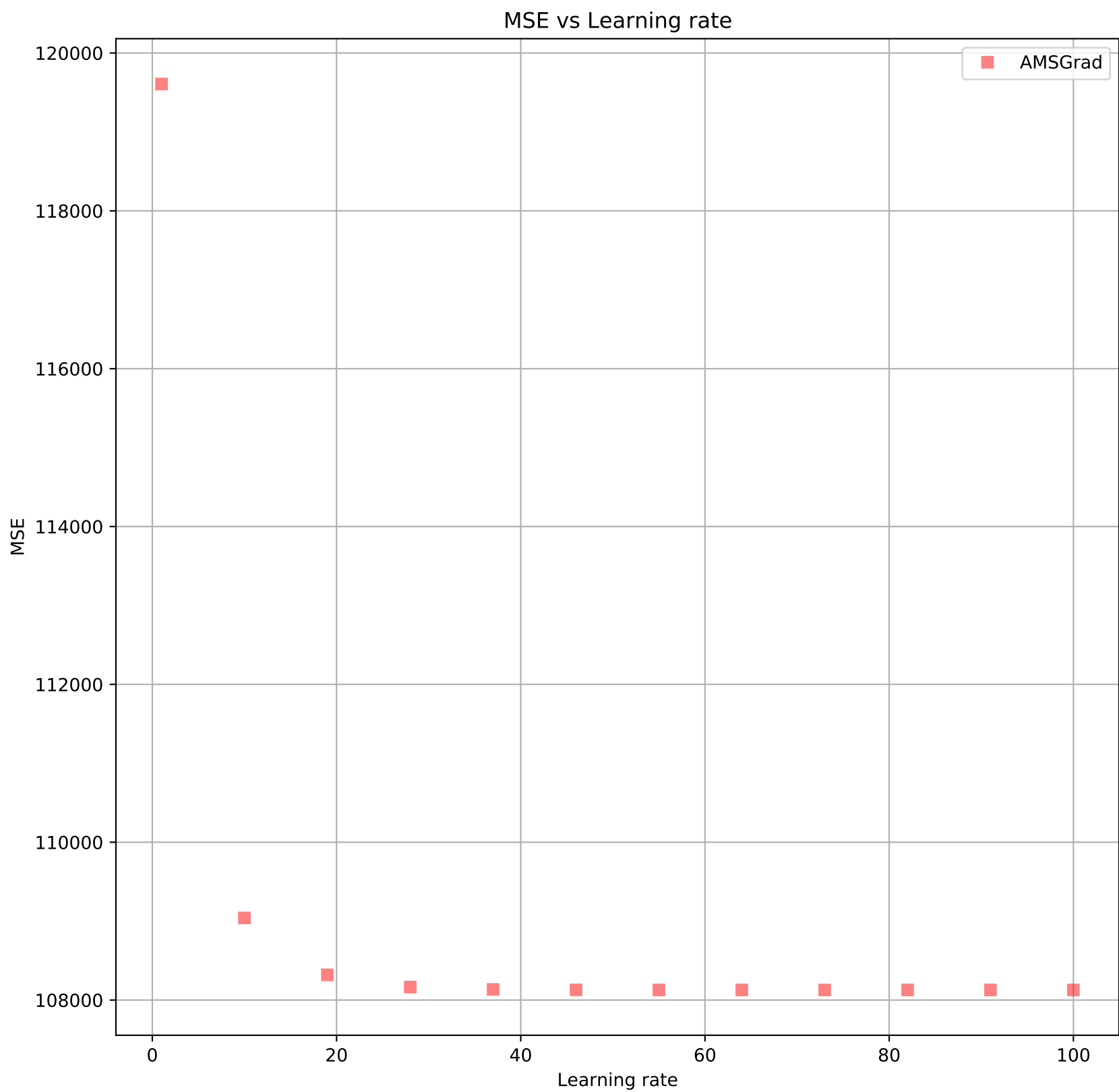
Learning rate = 91.0



Learning rate = 100.0

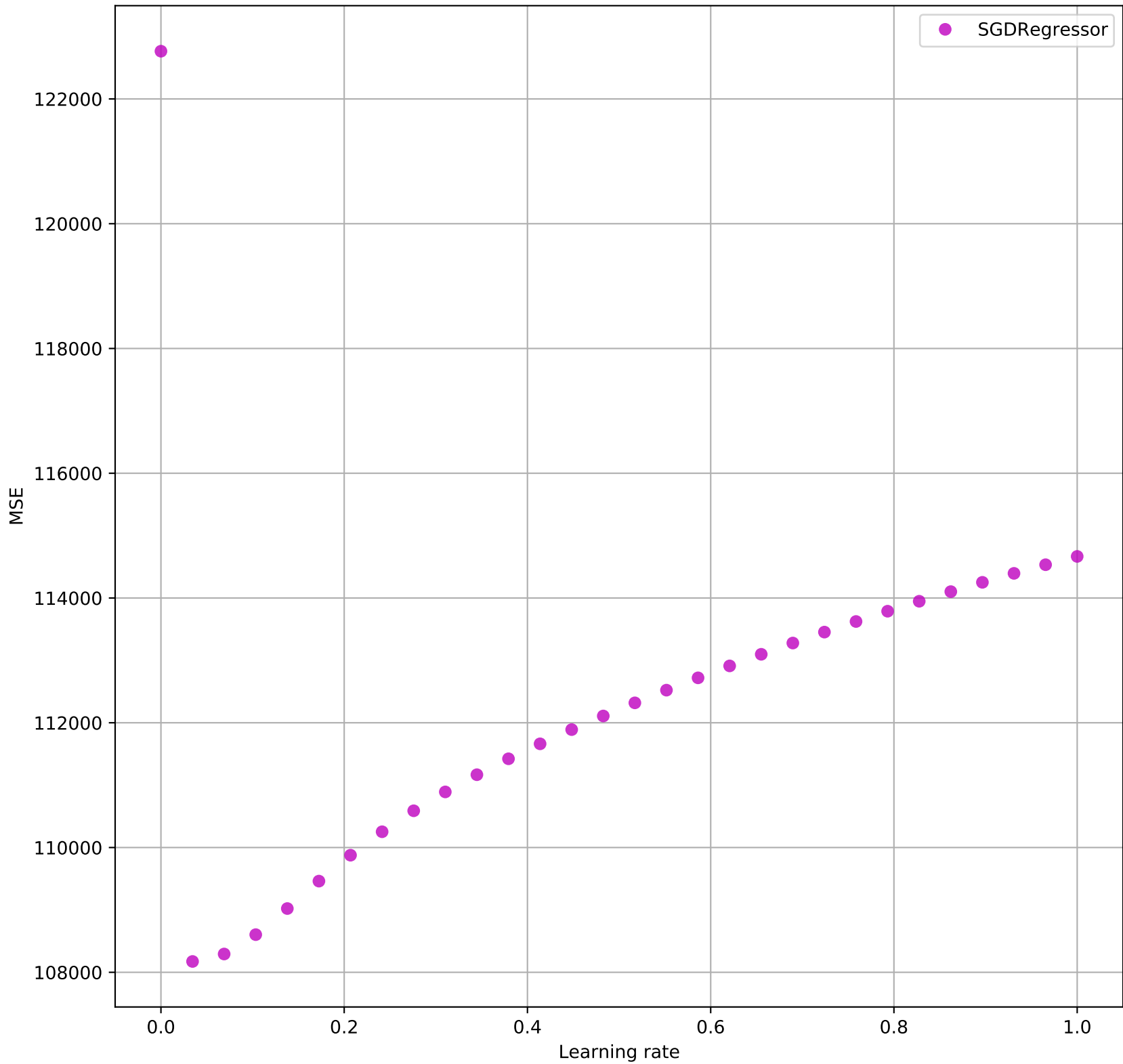






Performance Comparison Sorted by MSE				
Algorithm	Learning Rate	Iterations	MSE	R2
AMSGrad	112.0	179	108128.2218947913	0.4800044775316694
AMSGrad	120.0	185	108128.22190608221	0.48000447747737074
AMSGrad	104.0	178	108128.22194567887	0.48000447728694784
AMSGrad	92.0	184	108128.22195129441	0.48000447725994233
AMSGrad	116.0	176	108128.22198161956	0.48000447711410676
AMSGrad	108.0	179	108128.22209875047	0.4800044765508167
AMSGrad	84.0	178	108128.22211129875	0.4800044764904713
AMSGrad	76.0	191	108128.22213209954	0.48000447639043897
AMSGrad	88.0	171	108128.22266101275	0.4800044738468615
AMSGrad	64.0	231	108128.2230836276	0.4800044718144798
AMSGrad	80.0	168	108128.22317930179	0.4800044713543765
AMSGrad	60.0	251	108128.22318374523	0.4800044713330077
AMSGrad	68.0	210	108128.22332092284	0.48000447067331176
AMSGrad	96.0	168	108128.22336829132	0.48000447044551375
AMSGrad	56.0	272	108128.22337733695	0.48000447040201266
AMSGrad	52.0	296	108128.22356907136	0.4800044694799498
AMSGrad	100.0	161	108128.2236065356	0.4800044692997818
AMSGrad	48.0	324	108128.22377081204	0.48000446850976597
AMSGrad	44.0	357	108128.22393684606	0.4800044677112977
AMSGrad	40.0	395	108128.22426885506	0.4800044661146452
AMSGrad	68.0	200	108128.22522591145	0.48000446151209997
Vanilla	0.77	554	108128.22555333427	0.48000445993750274
Vanilla	0.5900000000000001	709	108128.22684937221	0.4800044537047735
Vanilla	0.41	994	108128.22915414098	0.4800044426209933
AMSGrad	72.0	172	108128.23241841751	0.48000442692287915
AMSGrad	64.0	200	108128.23378869149	0.48000442033314406
Vanilla	0.77	500	108128.23663255699	0.4800044066568133
AMSGrad	60.0	200	108128.25861221821	0.4800043009552193
AMSGrad	56.0	200	108128.32344450372	0.480003989172619
AMSGrad	52.0	200	108128.48519775765	0.48000321129089385
Vanilla	0.5900000000000001	500	108128.50357434053	0.4800031229167335
AMSGrad	48.0	200	108128.8766150218	0.4800013289402808
AMSGrad	44.0	200	108129.77213182539	0.4799970223427986
Vanilla	0.22999999999999998	1000	108130.59213833822	0.47999307887912557
AMSGrad	40.0	200	108131.78979380442	0.47998731927752514
Vanilla	0.41	500	108133.48968720195	0.4799791443816478
Vanilla	0.77	200	108155.29114882273	0.4798742997608133
Vanilla	0.5900000000000001	200	108215.94338675242	0.47958261927630663
Vanilla	0.22999999999999998	500	108225.99681315623	0.4795342717068761
Vanilla	0.41	200	108413.70416838444	0.4786315750515292
Vanilla	0.05	1000	108982.49233654414	0.4758962364369371
Vanilla	0.22999999999999998	200	109113.48948119665	0.4752662628048753
Vanilla	0.05	500	110486.50283302691	0.4686633539367756
AMSGrad	0.95	1000	111352.60550453218	0.46449821089374277
AMSGrad	0.77	1000	112272.01125728386	0.46007672992989534
Vanilla	0.05	200	113601.76556793595	0.4536818565526669
AMSGrad	0.95	500	113948.34398690521	0.4520151388087691
AMSGrad	0.5900000000000001	1000	114106.1401241	0.45125628711060717
AMSGrad	0.77	500	115819.97471122345	0.44301434716247157
AMSGrad	0.41	1000	117736.20136242782	0.4337990908565805
AMSGrad	0.5900000000000001	500	118642.97882658536	0.4294383401388272
AMSGrad	0.95	200	120183.59684553106	0.4220294097259579
AMSGrad	0.77	200	122787.08021293751	0.40950909199439134
AMSGrad	0.41	500	123325.98942229208	0.40691744320029577
AMSGrad	0.22999999999999998	1000	125872.56358142066	0.39467080548466904
AMSGrad	0.5900000000000001	200	127328.53263782532	0.3876689573370178
AMSGrad	0.41	200	139865.6261905367	0.32737727401941263
AMSGrad	0.22999999999999998	500	140461.01808275984	0.32451399639730194
AMSGrad	0.22999999999999998	200	190254.30453080306	0.08505490284854589
AMSGrad	0.05	1000	258898.11567517047	-0.24505756746437068
AMSGrad	0.05	500	312101.78454287804	-0.5009174078029488
AMSGrad	0.05	200	365674.9571230659	-0.7585542150855697
Vanilla	0.95	200	4865831820316.003	-23400094.87978004
Vanilla	0.95	500	4.505672479158582e+23	2.1668066614014182e+18
Vanilla	0.95	1000	8.53946200803527e+41	4.106681799306148e+36

MSE vs Learning rate



SGDRegressor Performance Comparison Sorted by MSE			
Learning Rate	Iterations	MSE	R2
0.00676	1000.0	108134.33421039776	0.47997508301568104
0.00676	500.0	108136.64937574907	0.4799639492376965
0.00676	200.0	108140.82022696485	0.4799438913479145
0.01342	1000.0	108147.74665484666	0.47991058171401757
0.01342	500.0	108152.69465518229	0.47988678646450167
0.01342	200.0	108159.28873183507	0.4798550751288838
0.02008	1000.0	108159.29870943361	0.4798550271459755
0.02008	500.0	108163.8291824152	0.47983323981216186
0.02674	1000.0	108166.56694073649	0.4798200737576044
0.02008	200.0	108169.45073817136	0.4798062053916259
0.02674	500.0	108171.04149294154	0.4797985553503754
0.033400000000000006	1000.0	108172.58055240168	0.47979115391517135
0.033400000000000006	500.0	108180.47297396889	0.4797531987559681
0.02674	200.0	108180.89183248443	0.4797511844386251
0.040060000000000005	1000.0	108181.00945381902	0.4797506187901176
0.046720000000000005	1000.0	108194.55954027329	0.47968545555926256
0.040060000000000005	500.0	108196.93806880634	0.4796740170636915
0.033400000000000006	200.0	108203.49550238384	0.47964248194696213
0.053380000000000004	1000.0	108214.9217013587	0.4795875326265938
0.046720000000000005	500.0	108223.23485507559	0.47954755413962136
0.040060000000000005	200.0	108242.33607027732	0.47945569517621156
0.06004	1000.0	108242.99110648155	0.479452545065285
0.053380000000000004	500.0	108260.62413734541	0.4793677466940913
0.06670000000000001	1000.0	108279.06501369849	0.4792790633423636
0.046720000000000005	200.0	108298.97316107474	0.47918332379060835
0.06004	500.0	108309.27742666569	0.4791337699195123
0.07336000000000001	1000.0	108323.00176808993	0.4790677686853815
0.06670000000000001	500.0	108368.62674572447	0.4788483552550399
0.053380000000000004	200.0	108372.72815536398	0.4788286313142316
0.08002000000000001	1000.0	108374.3520877073	0.4788208217199137
0.08668000000000001	1000.0	108432.46685214066	0.4785413441074542
0.07336000000000001	500.0	108437.64259813311	0.4785164536145343
0.06004	200.0	108461.63084129071	0.4784010926216756
0.09334	1000.0	108496.58244244642	0.4782330081402554
0.08002000000000001	500.0	108515.04767769398	0.47814420764504895
0.06670000000000001	200.0	108563.10590244088	0.47791309257399484
0.1	1000.0	108565.88521736728	0.4778997266710703
0.08668000000000001	500.0	108599.47128906955	0.47773820910797304
0.07336000000000001	200.0	108674.42923267529	0.4773777315715316
0.09334	500.0	108689.55351053501	0.4773049979537045
0.1	500.0	108784.01036043986	0.47685074893197577
0.08002000000000001	200.0	108793.00016839697	0.4768075163715616
0.08668000000000001	200.0	108916.48403543771	0.4762136745712151
0.09334	200.0	109042.87176995346	0.4756058678867858
0.1	200.0	109170.49034722602	0.47499214200095674
0.0001	1000.0	111467.33874138622	0.46394645143264257
0.0001	500.0	113311.31632900004	0.4550786454862532
0.0001	200.0	115952.74773681817	0.4423758332055787

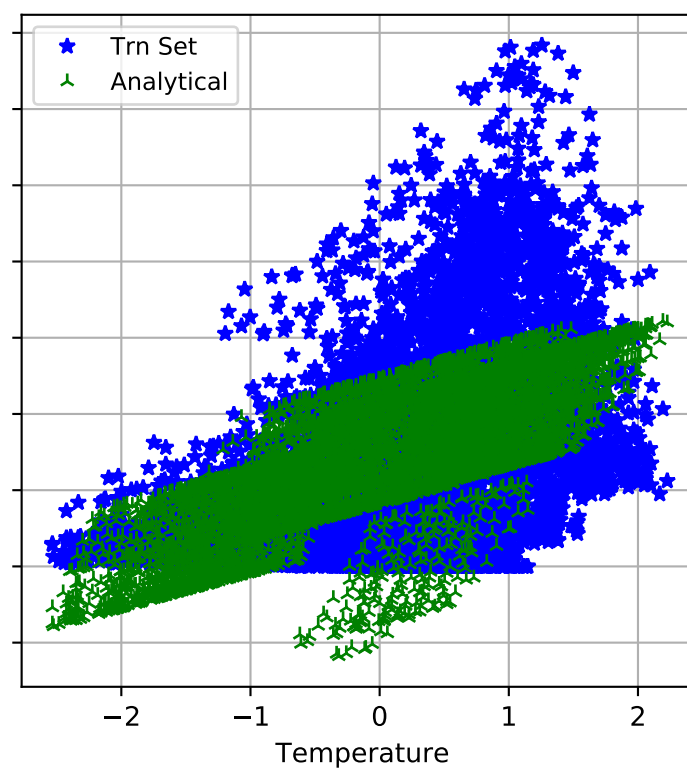
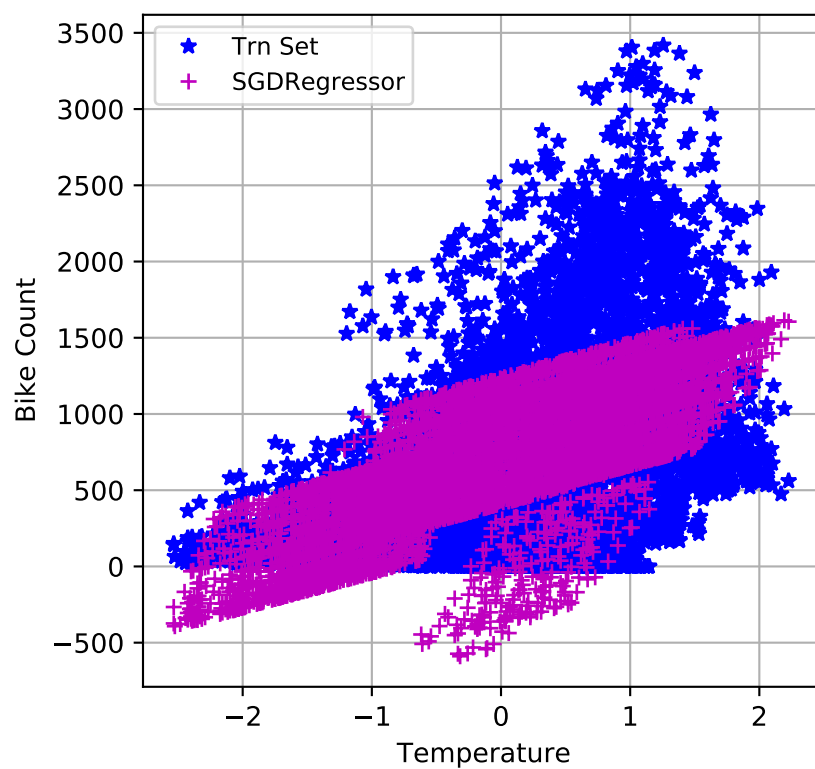
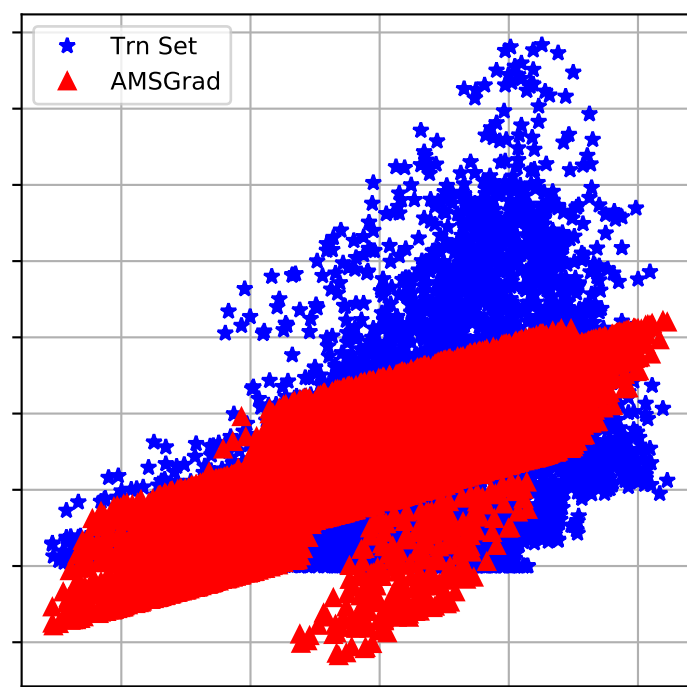
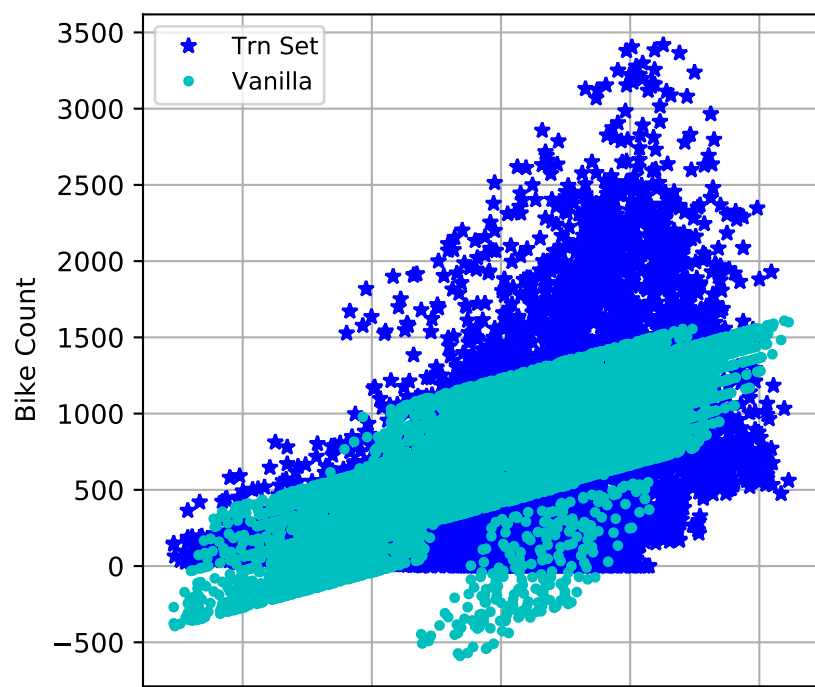
MSE and R2 from Training Set using the best Previously Tuned parameters				
Algorithm	Learning Rate	Iterations	MSE	R2
Vanilla	0.77	554	108128.22555333427	0.48000445993750274
AMSGrad	112.0	179	108128.2218947913	0.4800044775316694
SGDRegressor	0.00676	1000	108134.33421039776	0.47997508301568104
Analytical Coeff	N/A	N/A	108128.2216768179	0.48000447857991746

Performance Comparison Testing set

Algorithm	MSE	R2
Vanilla	109071.57474847321	0.4759002708627674
AMSGrad	109071.39654586955	0.4759011271439436
SGDRegressor	109064.34461310349	0.47593501237995584

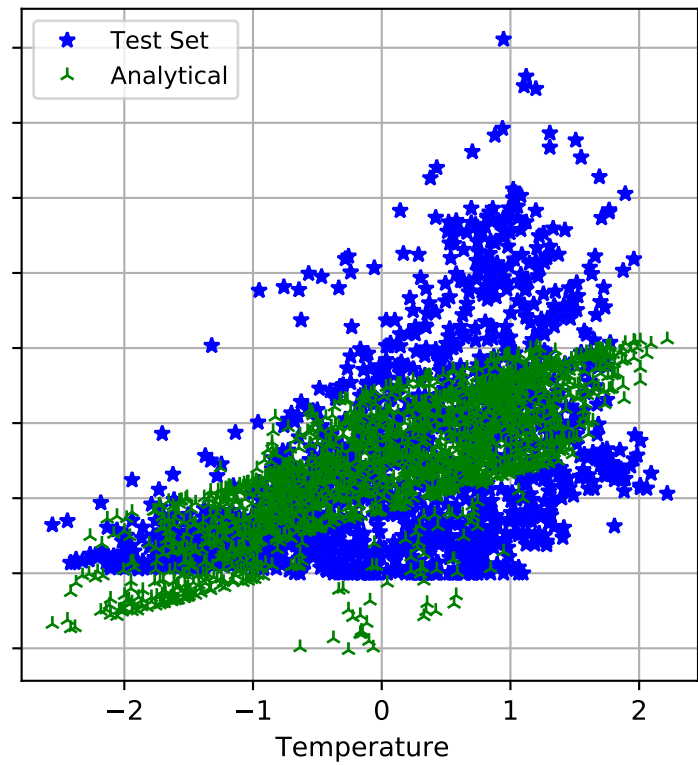
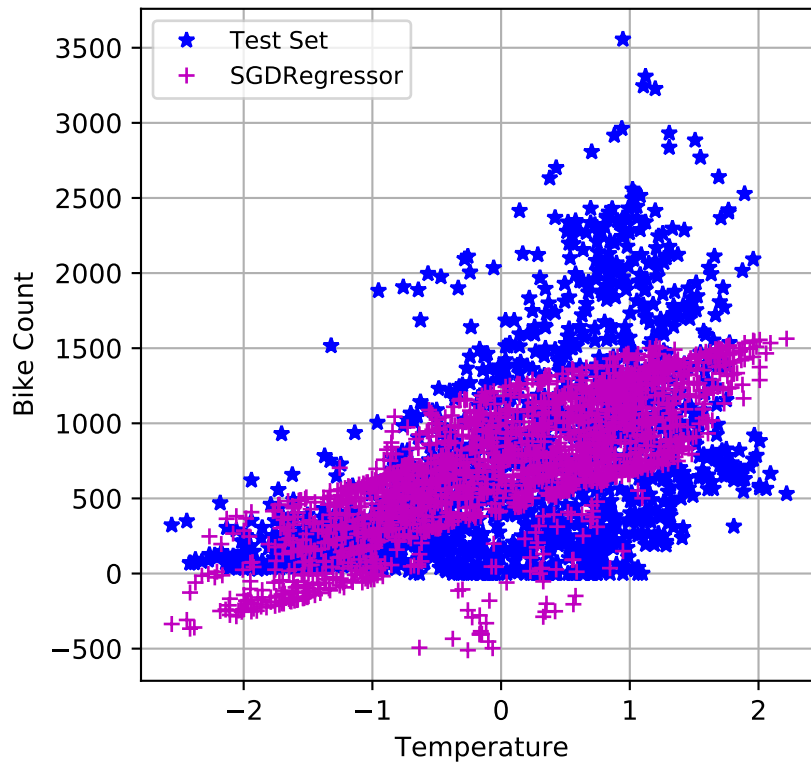
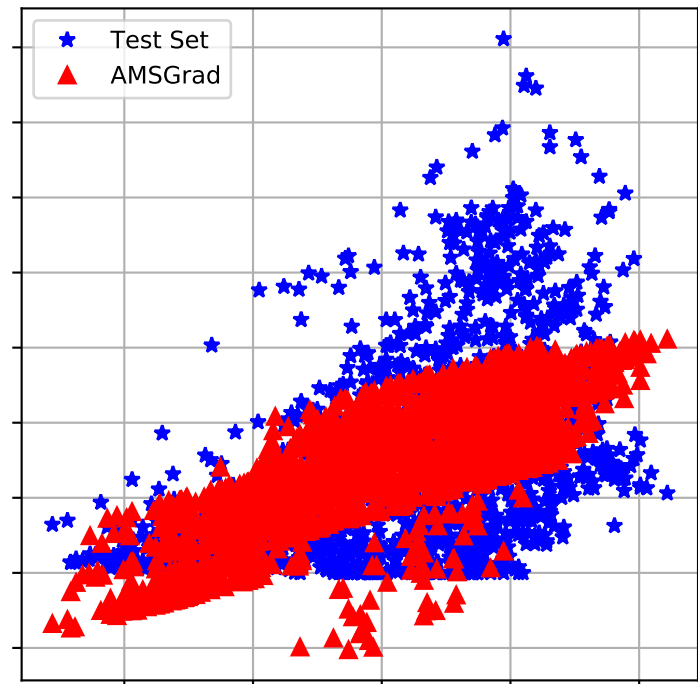
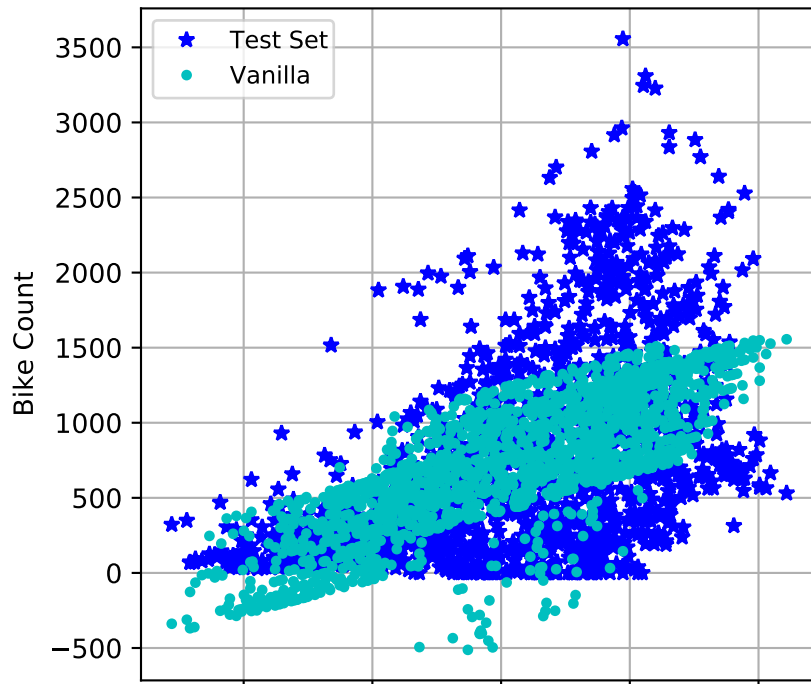
	Vanilla	AMSGrad	SGDRegressor	Analitical Coef
intcpt	-31.305919572428994	-31.74833711499714	-30.59717528839868	-31.780178776729464
Temperature	229.63618731735627	229.67564980752852	229.89852022172556	229.66349892372676
Solar Rad	0.47570458429778	0.4506976136066626	1.494771429615793	0.4767616230253913
Spring	-148.21312595175132	-148.20714646168116	-148.17818590763156	-148.22979017560985
Summer	-127.29891637777388	-127.35243828868815	-127.252497389659	-127.36131965541364
Winter	-372.1902029320534	-372.16667409266324	-371.7980168272174	-372.1806659616974
Funct Day	926.4618435909377	926.9279704846348	928.4500552792526	926.9623228541333
sin_hour	-337.26667153132155	-337.2712015426216	-337.64492162391696	-337.2578374664309
cos_hour	-3.4355022455491953	-3.4573578459221697	-5.263849764129242	-3.429774612924424

Trn values vs Predicted Trn values, Attribute: Temperature

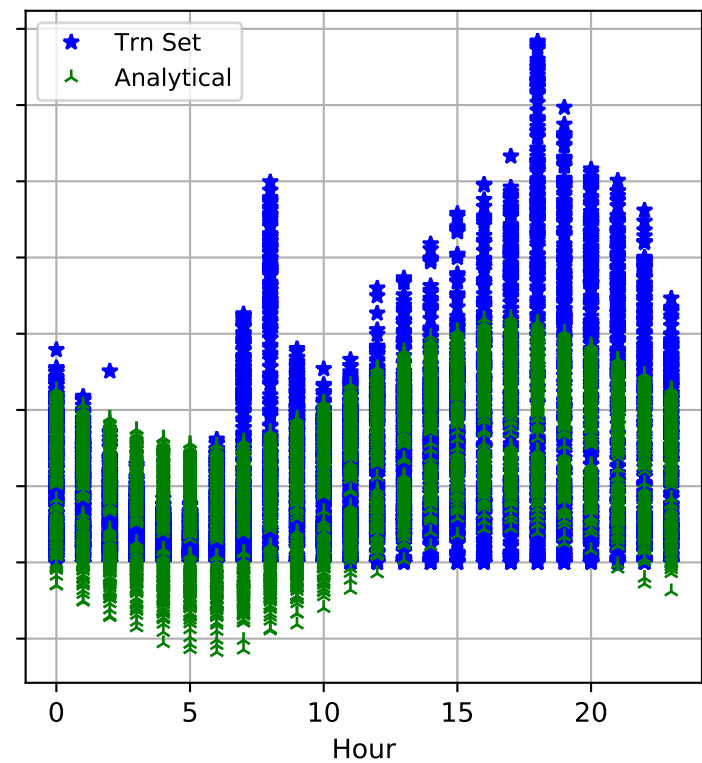
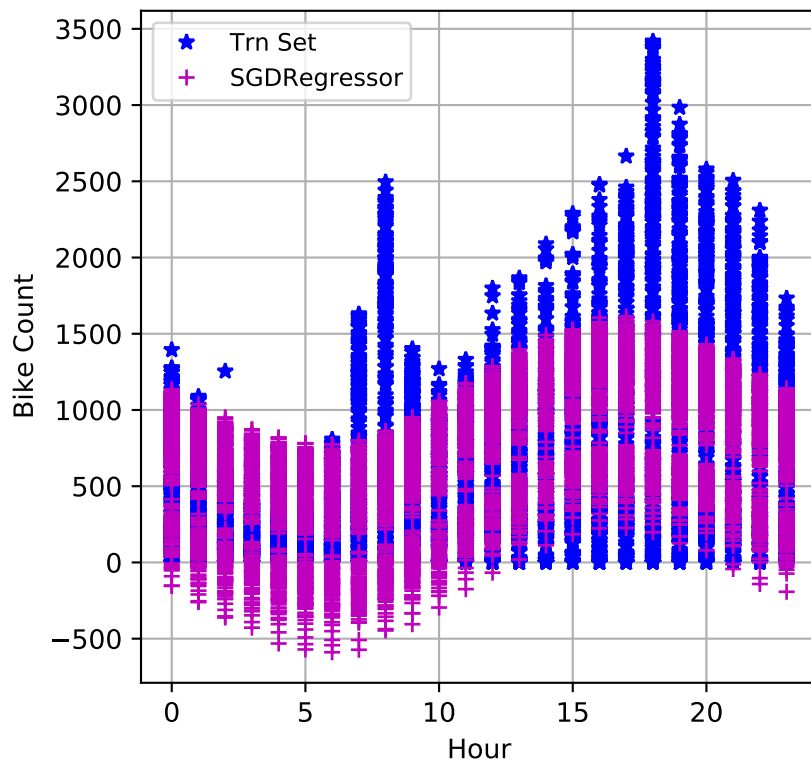
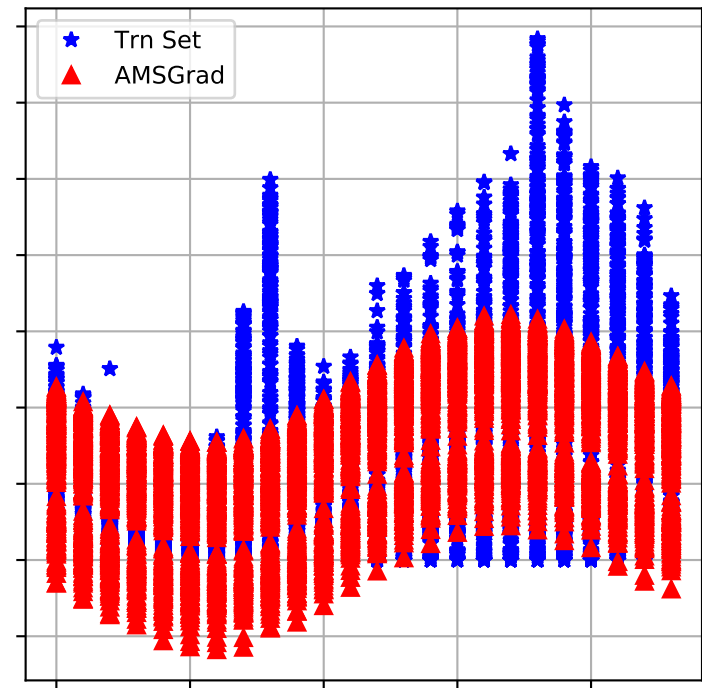
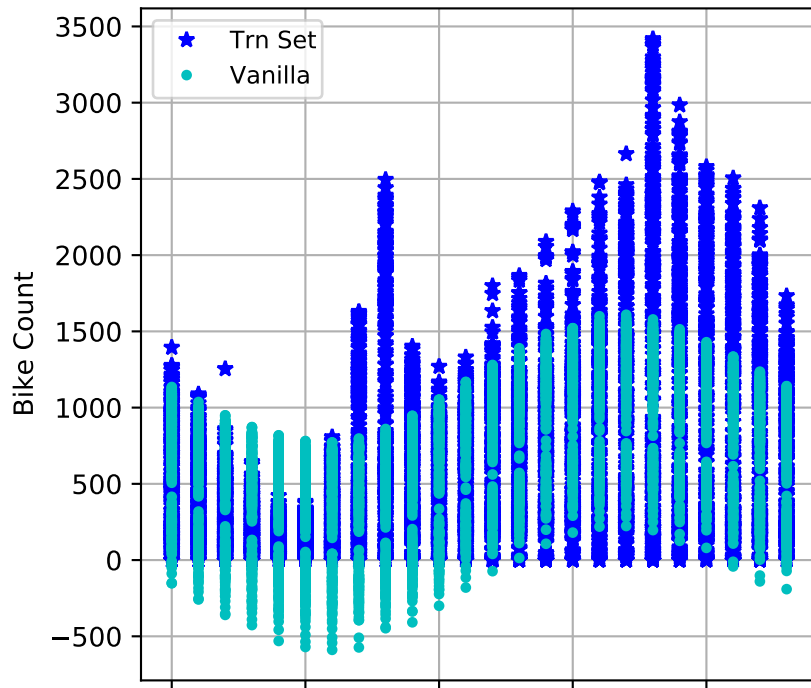




Test values vs Predicted Test values, Attribute: Temperature



Trn values vs Predicted Trn values, Attribute: Hour



Test values vs Predicted Test values, Attribute: Hour

