

P-1 bounds and net time i7-1165G7, prime95 v30.6b4, 10 GiB allowed at ~107M observed ~1.0477 tests saved/factor

Tests-saved in worktodo	B1	B2	est net time hours	test p	program's odds est. %	comments
0	0	0	0	na	0.00%	free data pt
0.8	320000	11584000	-6.245	107257547	3.06%	
0.9	364000	13705000	-8.701	107234357	3.23%	
0.96	395000	14894000	-7.935	107242217	3.32%	
1	403000	15491000	-7.999	107181343	3.36%	near optimal
1.1	450000	17661000	-8.432	107234417	3.50%	
1.16	472000	18873000	-7.254	107242279	3.57%	
1.2	497000	19508000	-5.942	107193389	3.62%	
2	851000	37318000	-3.111	107181367	4.37%	too slow
3	1284000	61709000	6.649	107191871	5.00%	don't do this

Probable time differential at ~107M from P-1 vs tests-saved assumed

$$f(x) = -1.25924502622086 x^3 + 9.95395503819901 x^2 - 16.3176248984251 x - 0.010735479642717$$

$$R^2 = 0.973019840630231$$



Differential of the fit function:  $g(x) = -1.259245 \cdot 3x^2 + 9.953955 \cdot 2x - 16.3176249$

Find the root near  $x = 1$   $g(x) = -3.777735x^2 + 19.90791x - 16.3176249 = 0$

Divide by a in form  $ax^2 + bx + c$   $h(x) = x^2 - 5.2698x + 4.31942$   $x =:$  1.015246221  $h(x) =:$  3.55417E-07

Evaluate  $g(x)$  at  $x = 1$  -0.187074

So a difference in tests\_saved by 1% near  $x=1$  makes only ~0.19% difference in time differential saved.

And note the time differential is itself a small fraction of the total time per exponent. (PRP time ~370. hours each on this hardware)

Net effect is anything from 0.9 to 1.2 tests saved is very near the optimal on the fit.

