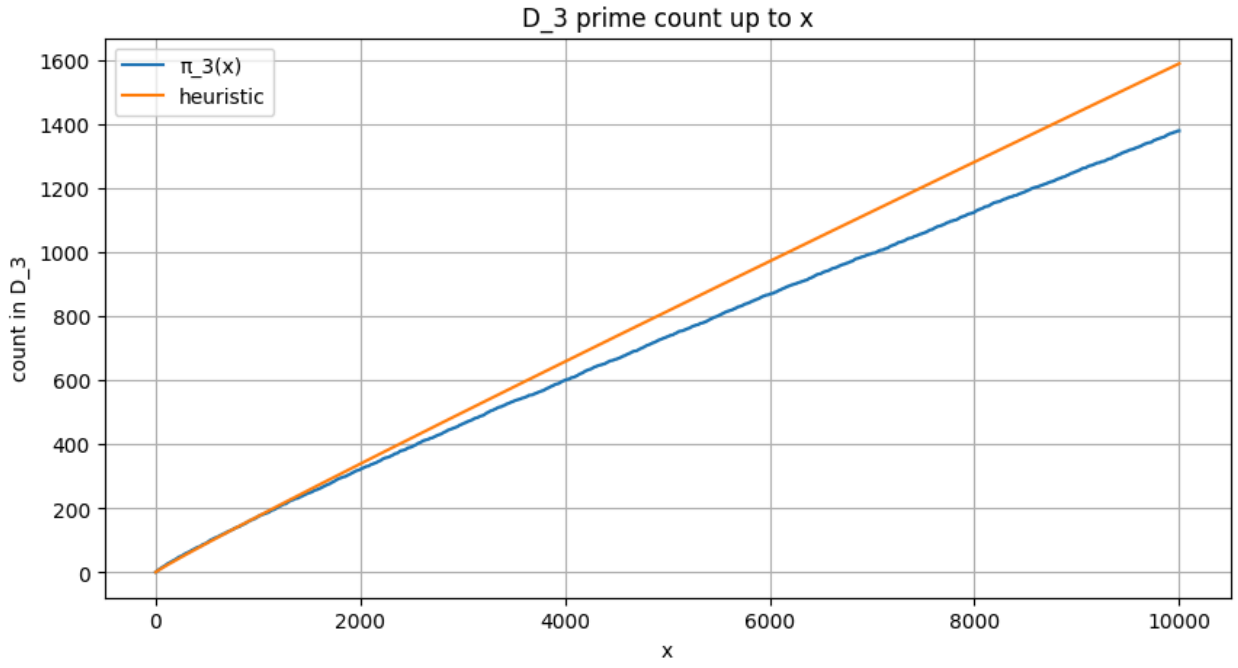
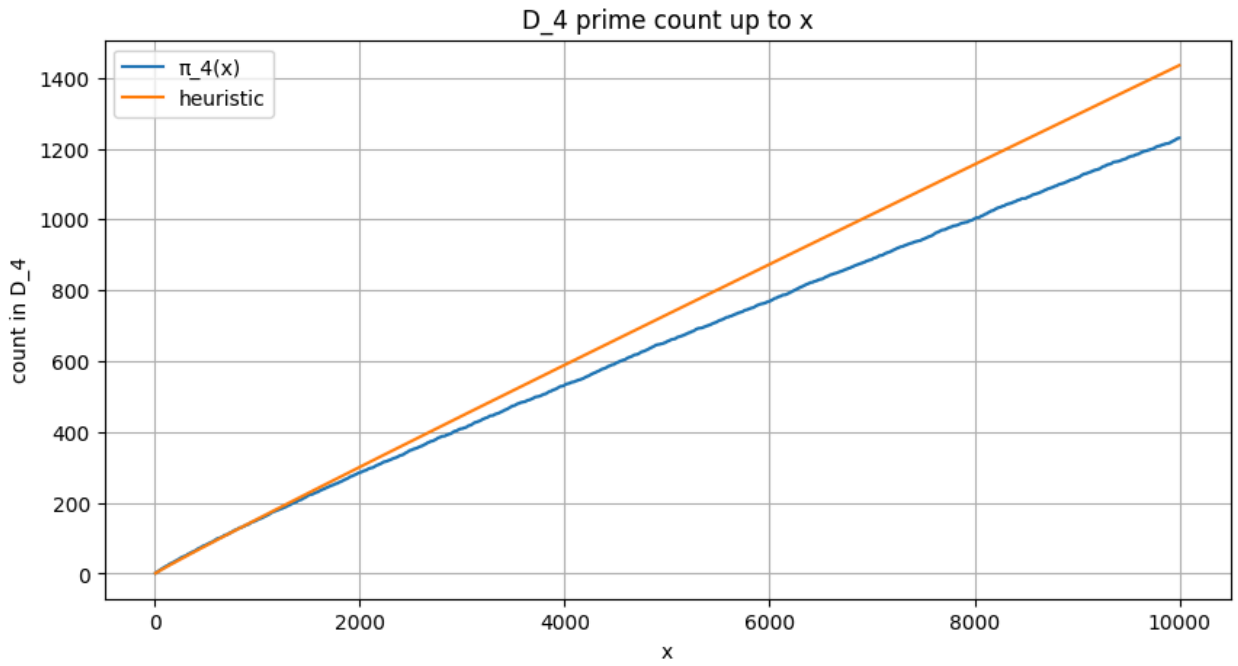
1 test primality in D_d
2 count primes and ratio
3 compare with Dirichlet expectation
4 graph π_d(x) and heuristic + MAPE vs d
your choice 4
enter N 10000
enter min d 3
enter max d 100

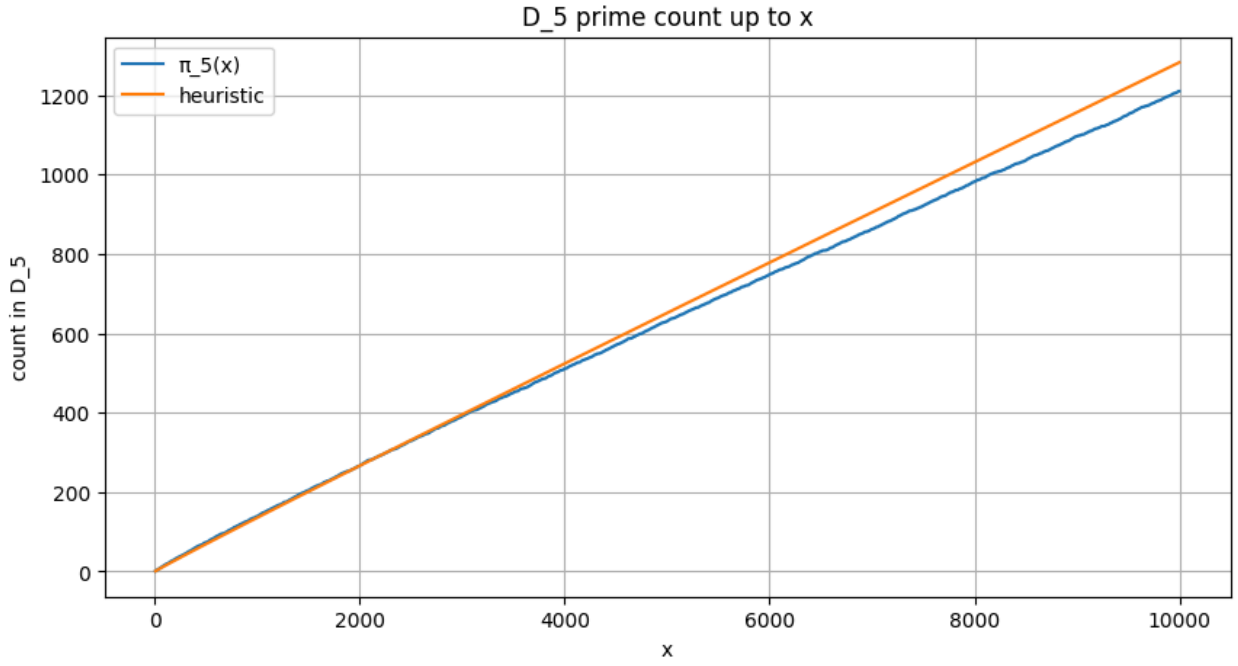
d	MAPE_heur
3	9.05



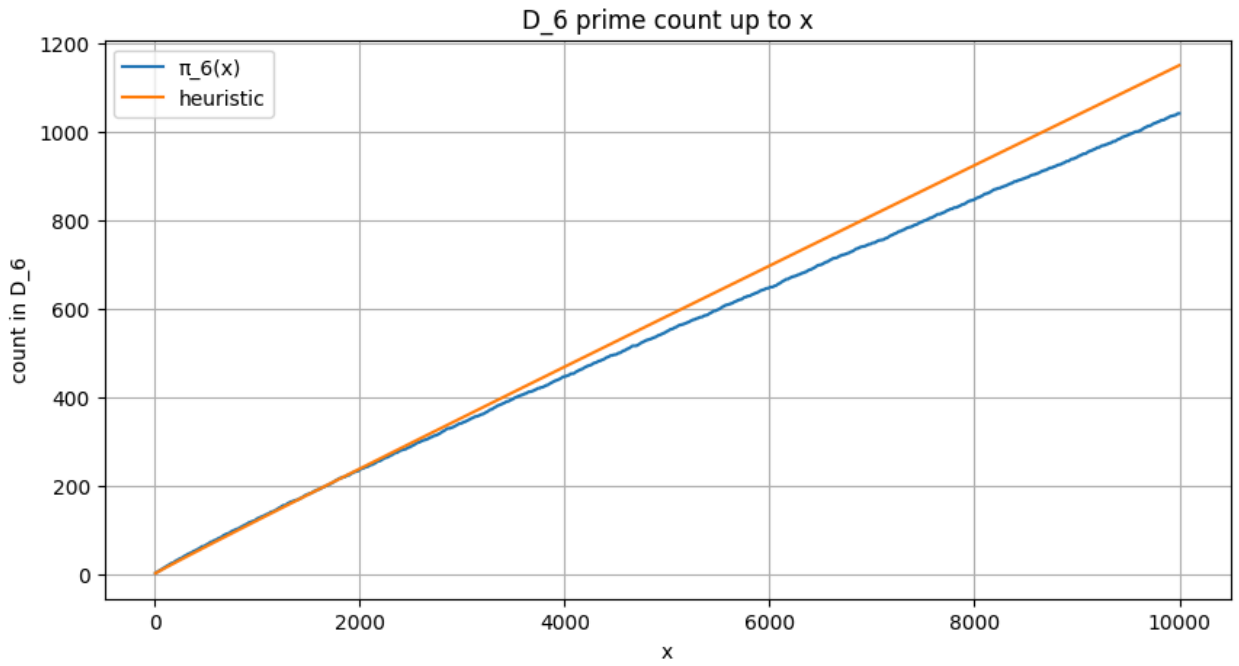
4	9.76


D_4 prime count up to x
π_4(x)
heuristic
count in D_4
x
0
200
400
600
800
1000
1200
1400
0
2000
4000
6000
8000
10000

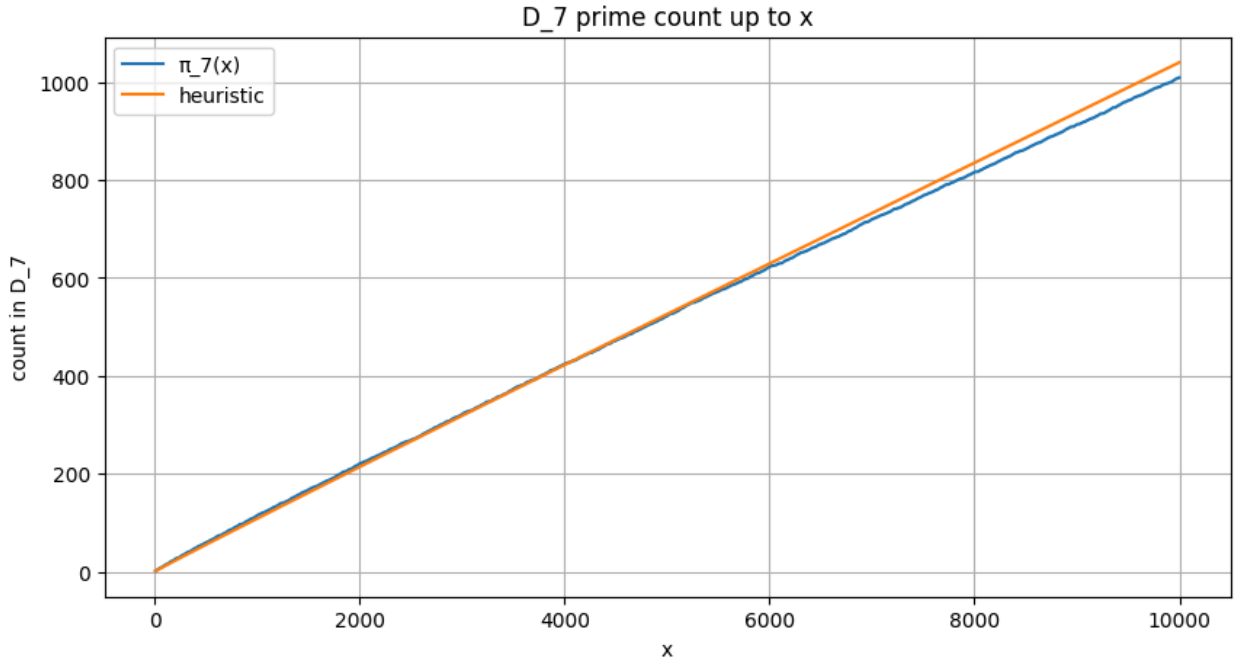
5 3.81


D_5 prime count up to x
π_5(x)
heuristic
count in D_5
x
0
200
400
600
800
1000
1200
0
2000
4000
6000
8000
10000

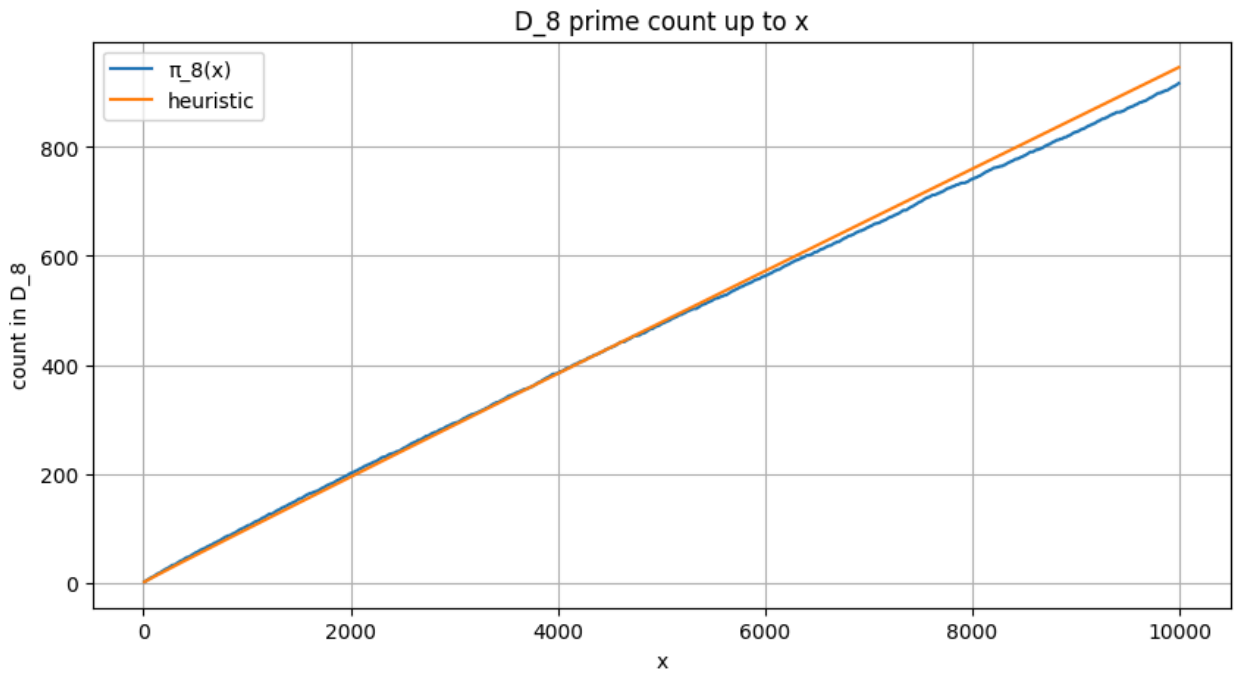
6 5.99


D_6 prime count up to x
π_6(x)
heuristic
count in D_6
x
0
200
400
600
800
1000
1200
0
2000
4000
6000
8000
10000

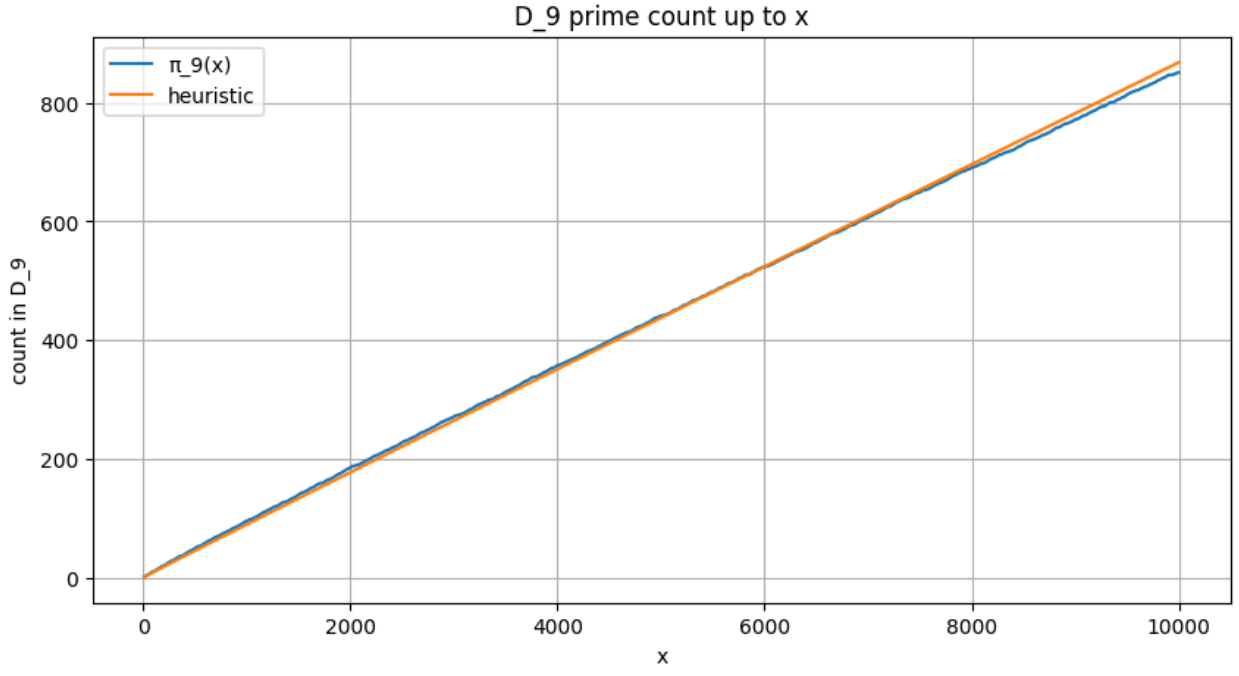
7 2.45


D_7 prime count up to x
π_7(x)
heuristic
count in D_7
x
0
200
400
600
800
1000
0
2000
4000
6000
8000
10000

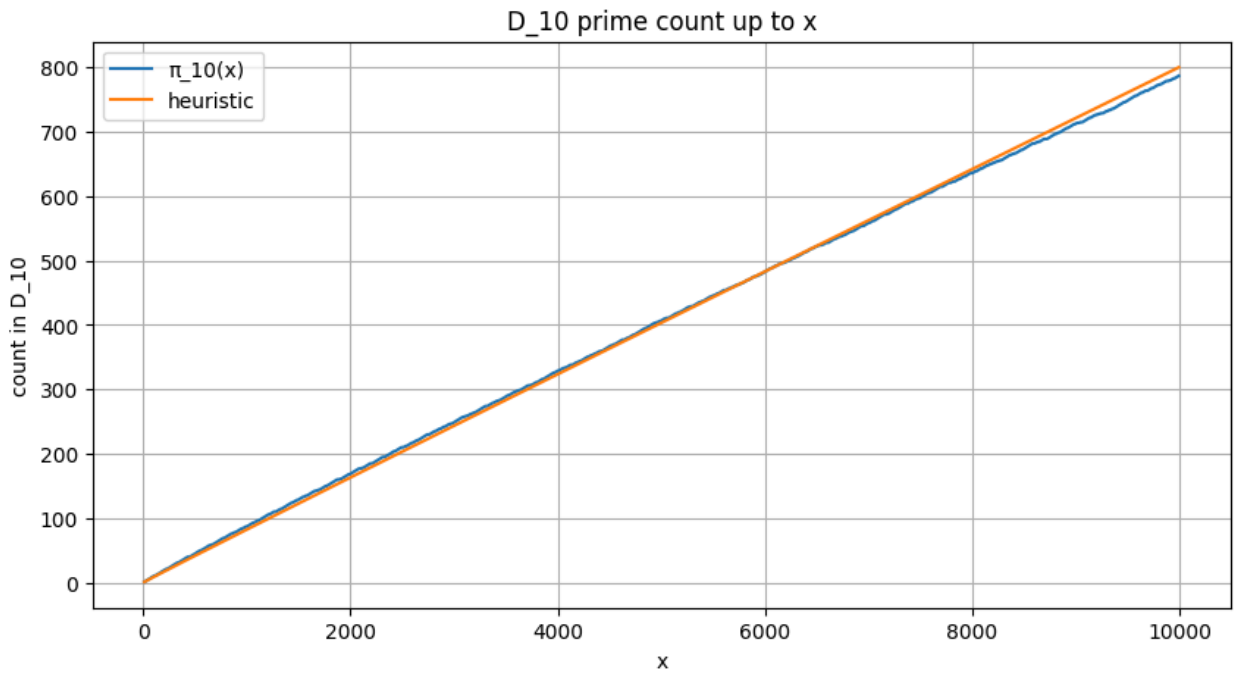
8 2.67


D_8 prime count up to x
π_8(x)
heuristic
count in D_8
x
0
200
400
600
800
0
2000
4000
6000
8000
10000

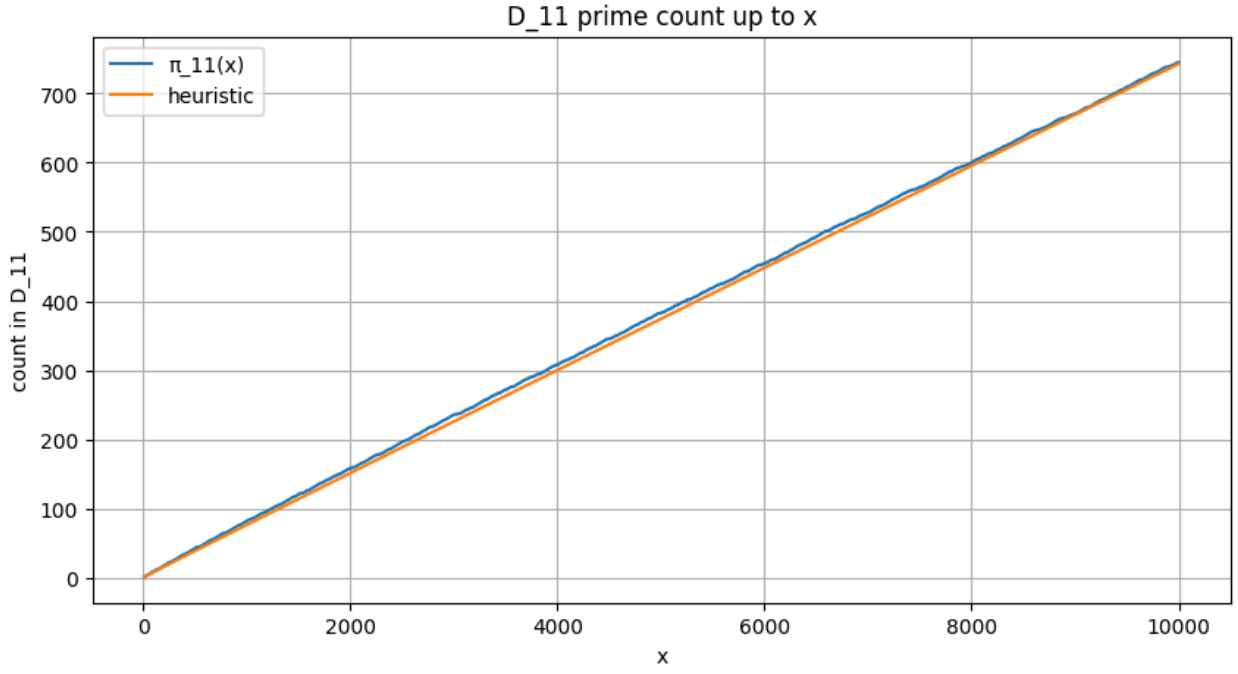
9 2.28


D_9 prime count up to x
π_9(x)
heuristic
count in D_9
x
0
200
400
600
800
0
2000
4000
6000
8000
10000

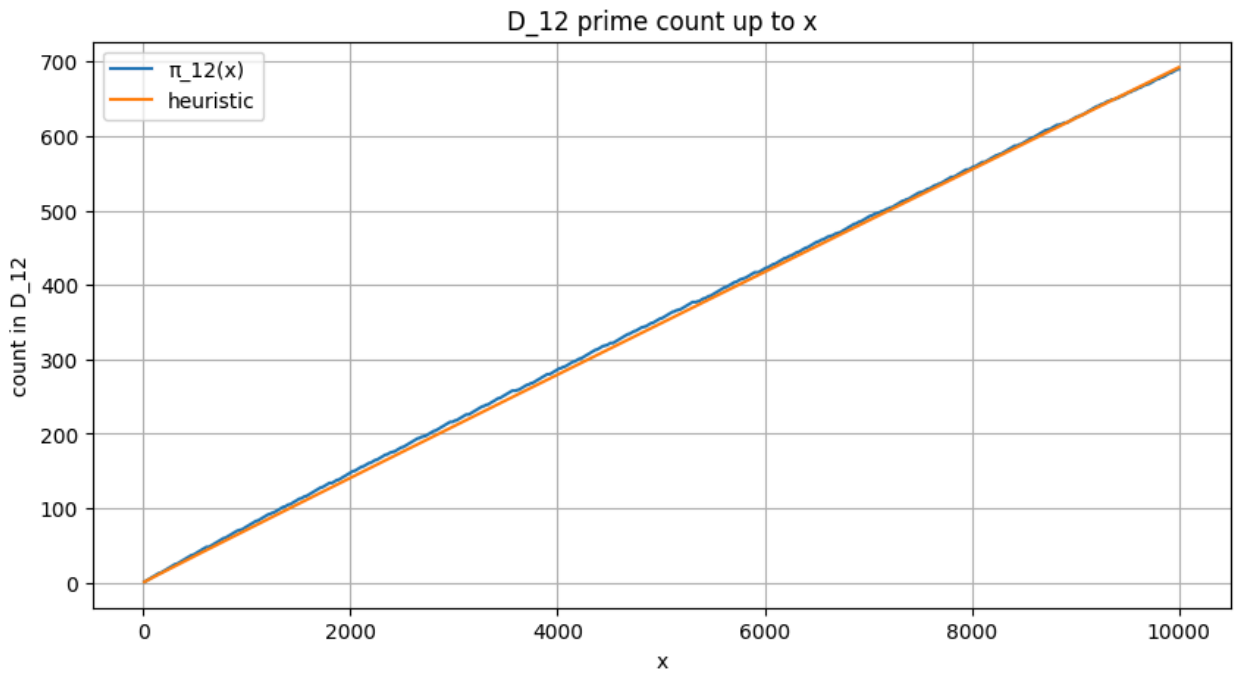
10 2.33


D_10 prime count up to x
π_10(x)
heuristic
count in D_10
x
0
100
200
300
400
500
600
700
800
0
2000
4000
6000
8000
10000

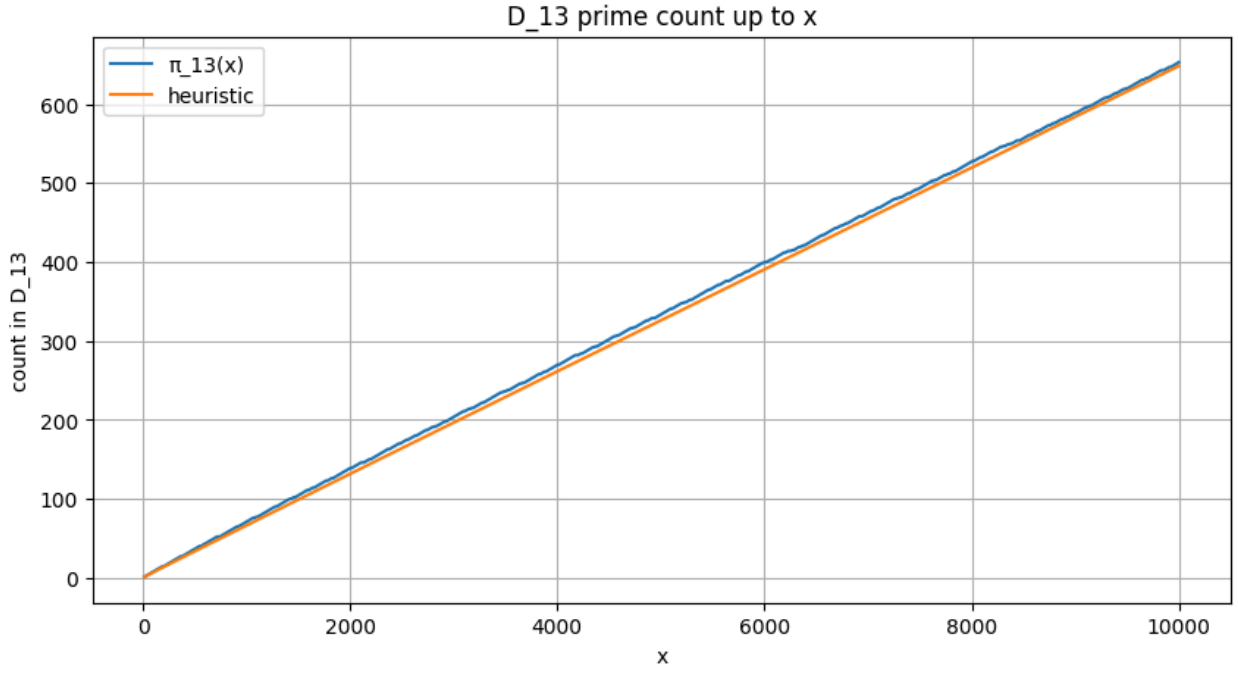
11 2.88


D_11 prime count up to x
π_11(x)
heuristic
count in D_11
x
0
100
200
300
400
500
600
700
0
2000
4000
6000
8000
10000

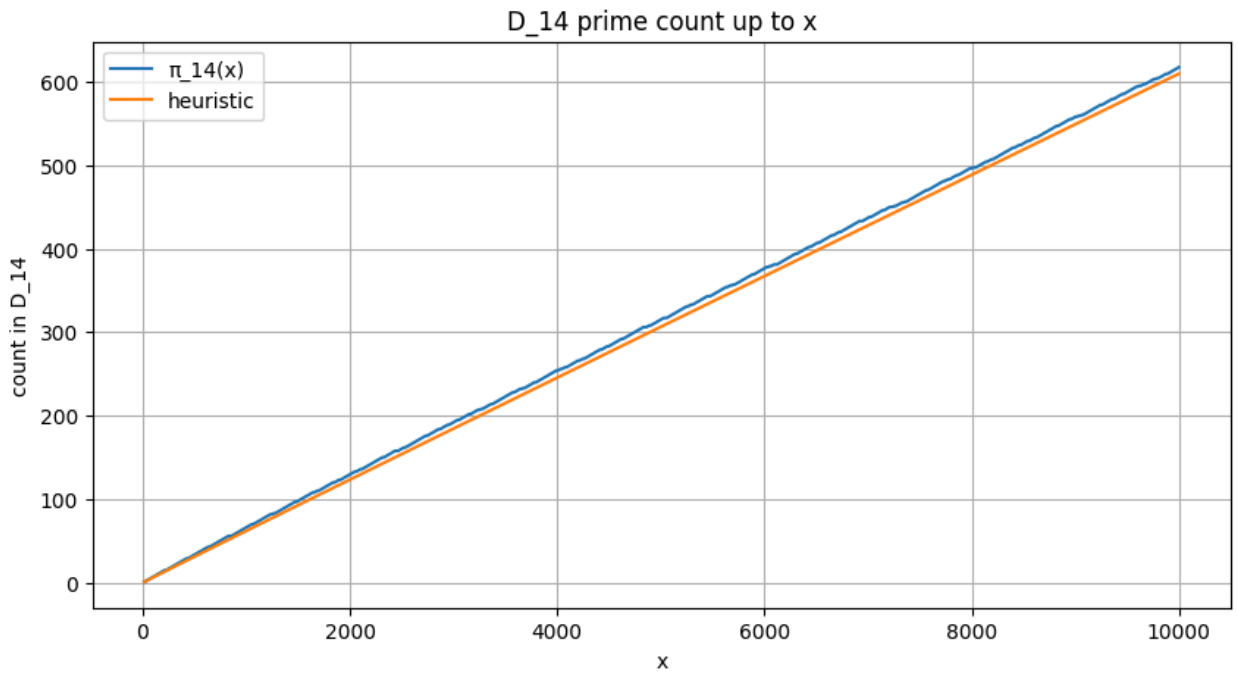
12 2.62


D_12 prime count up to x
π_12(x)
heuristic
count in D_12
x
0
100
200
300
400
500
600
700
0
2000
4000
6000
8000
10000

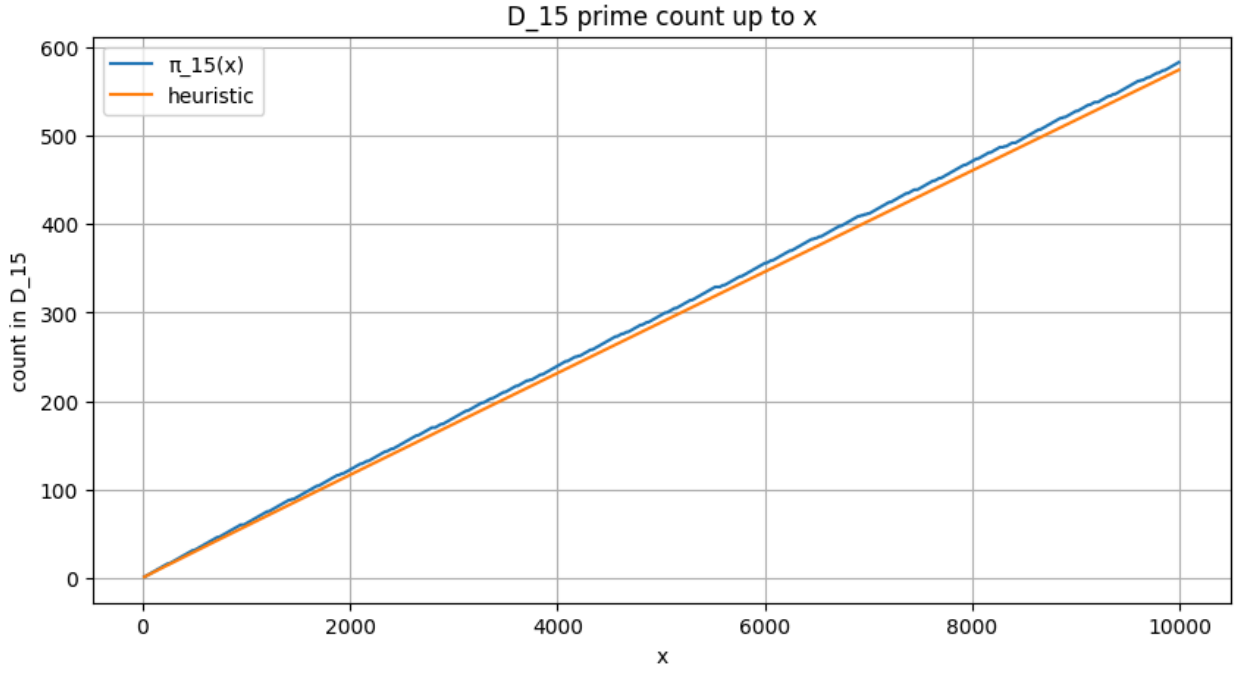
13 3.10


D_13 prime count up to x
π_13(x)
heuristic
count in D_13
x
0
100
200
300
400
500
600
0
2000
4000
6000
8000
10000

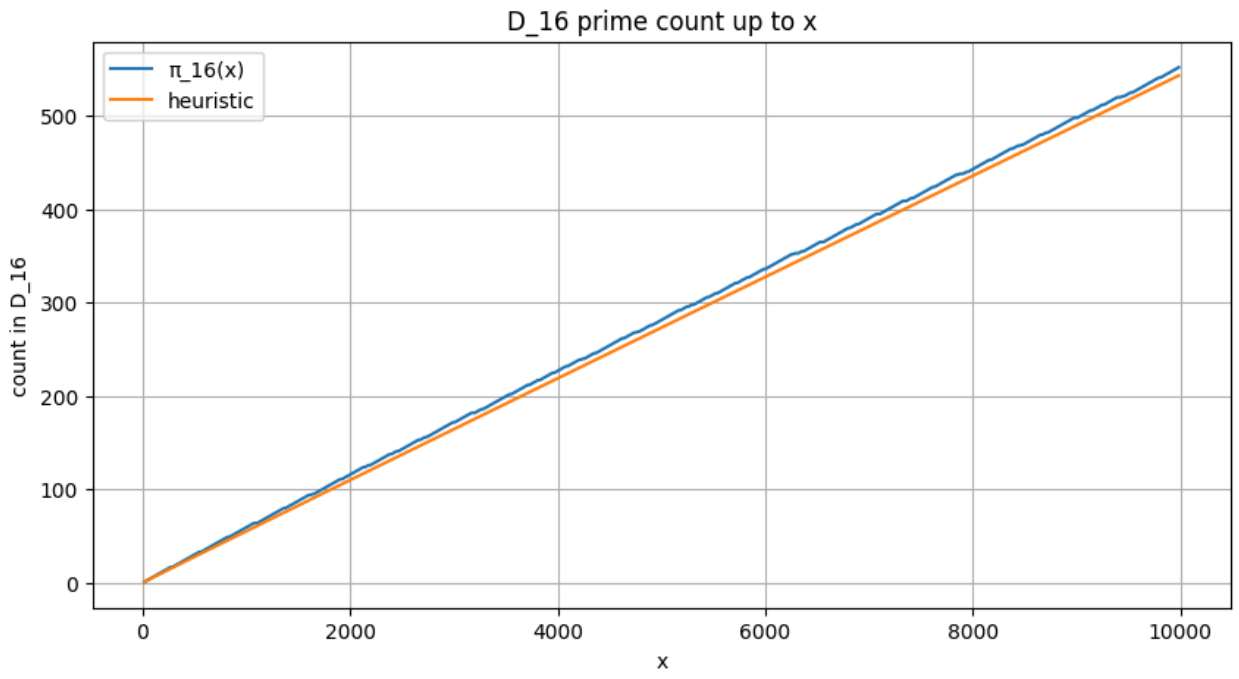
14 3.35


D_14 prime count up to x
π_14(x)
heuristic
count in D_14
x
0
100
200
300
400
500
600
0
2000
4000
6000
8000
10000

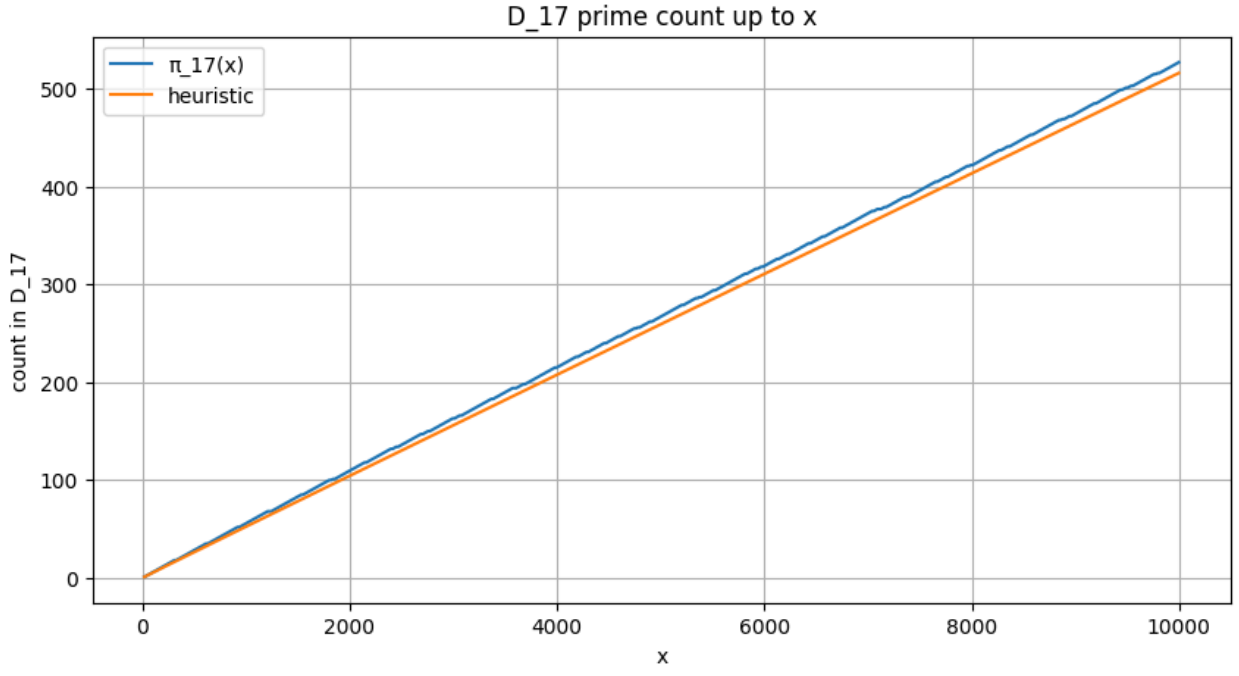
15 3.58


D_15 prime count up to x
π_15(x)
heuristic
count in D_15
x
0
100
200
300
400
500
600
0
2000
4000
6000
8000
10000

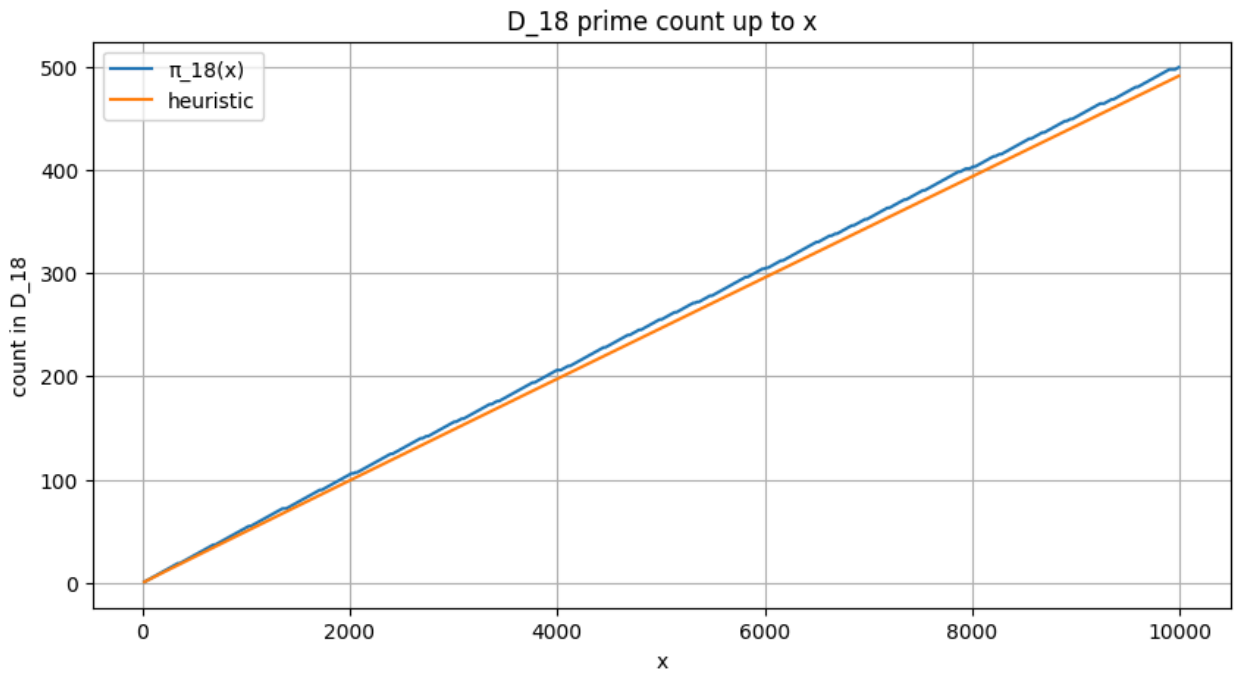
16 3.55


D_16 prime count up to x
π_16(x)
heuristic
count in D_16
x
0
100
200
300
400
500
0
2000
4000
6000
8000
10000

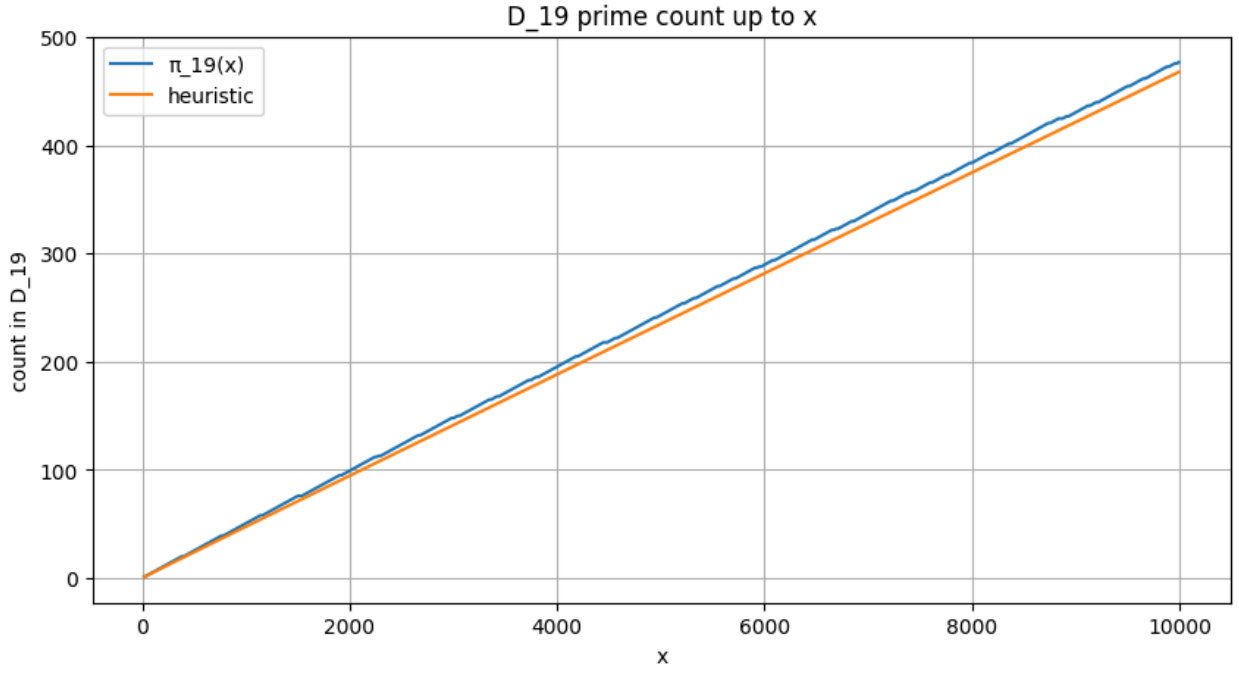
17 3.73


D_17 prime count up to x
π_17(x)
heuristic
count in D_17
x
0
100
200
300
400
500
0
2000
4000
6000
8000
10000

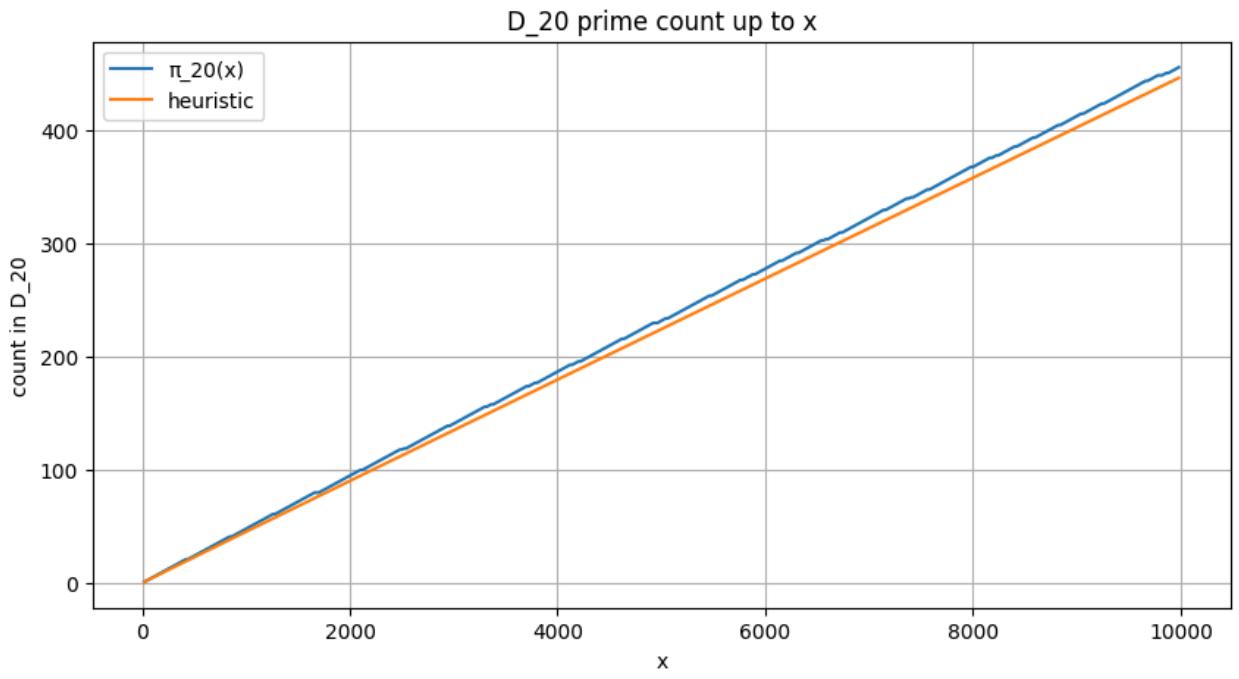
18 3.76


D_18 prime count up to x
π_18(x)
heuristic
count in D_18
x
0
100
200
300
400
500
0
2000
4000
6000
8000
10000

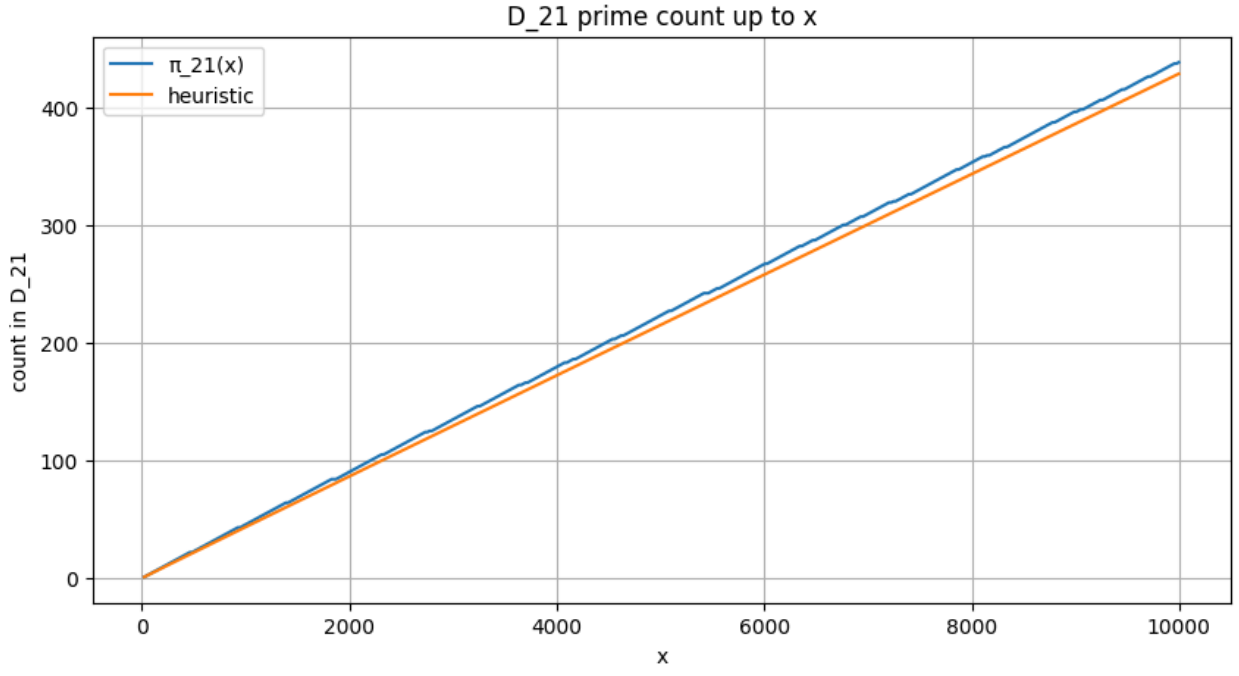
19 3.82


D_19 prime count up to x
π_19(x)
heuristic
count in D_19
x
0
100
200
300
400
500
0
2000
4000
6000
8000
10000

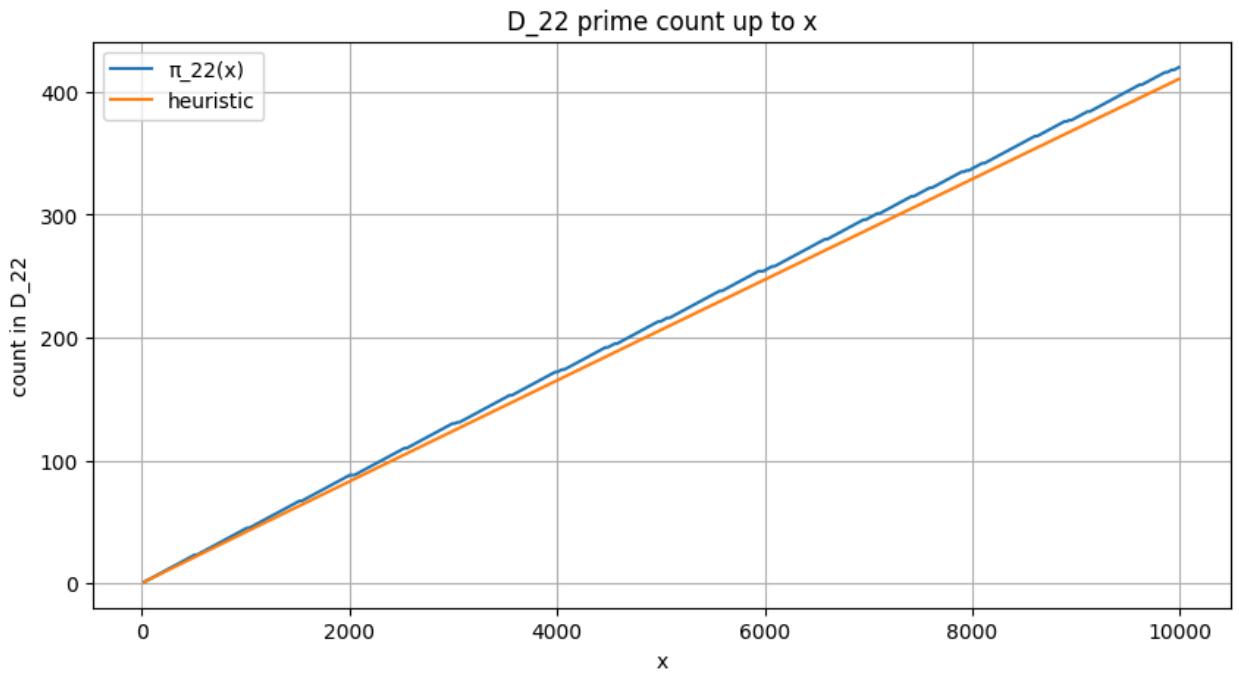
20 3.87


D_20 prime count up to x
π_20(x)
heuristic
count in D_20
x
0
100
200
300
400
0
2000
4000
6000
8000
10000

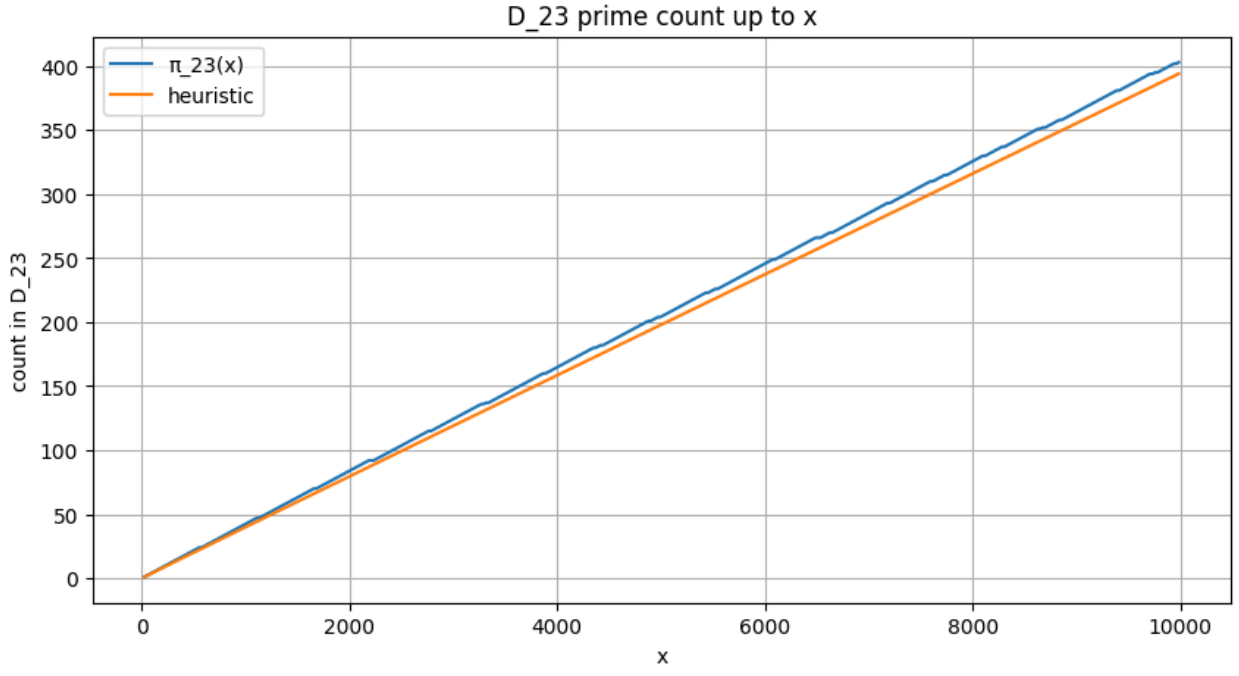
21 3.88


D_21 prime count up to x
π_21(x)
heuristic
count in D_21
x
0
100
200
300
400
0
2000
4000
6000
8000
10000

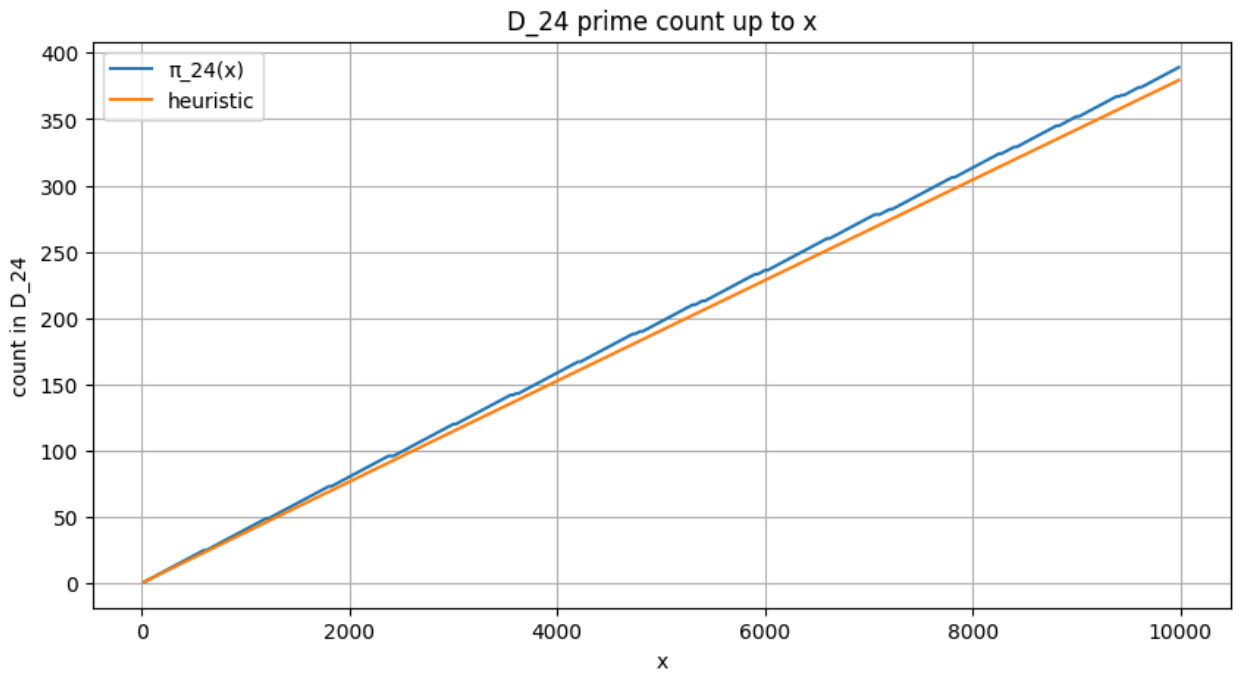
22 3.89


D_22 prime count up to x
π_22(x)
heuristic
count in D_22
x
0
100
200
300
400
0
2000
4000
6000
8000
10000

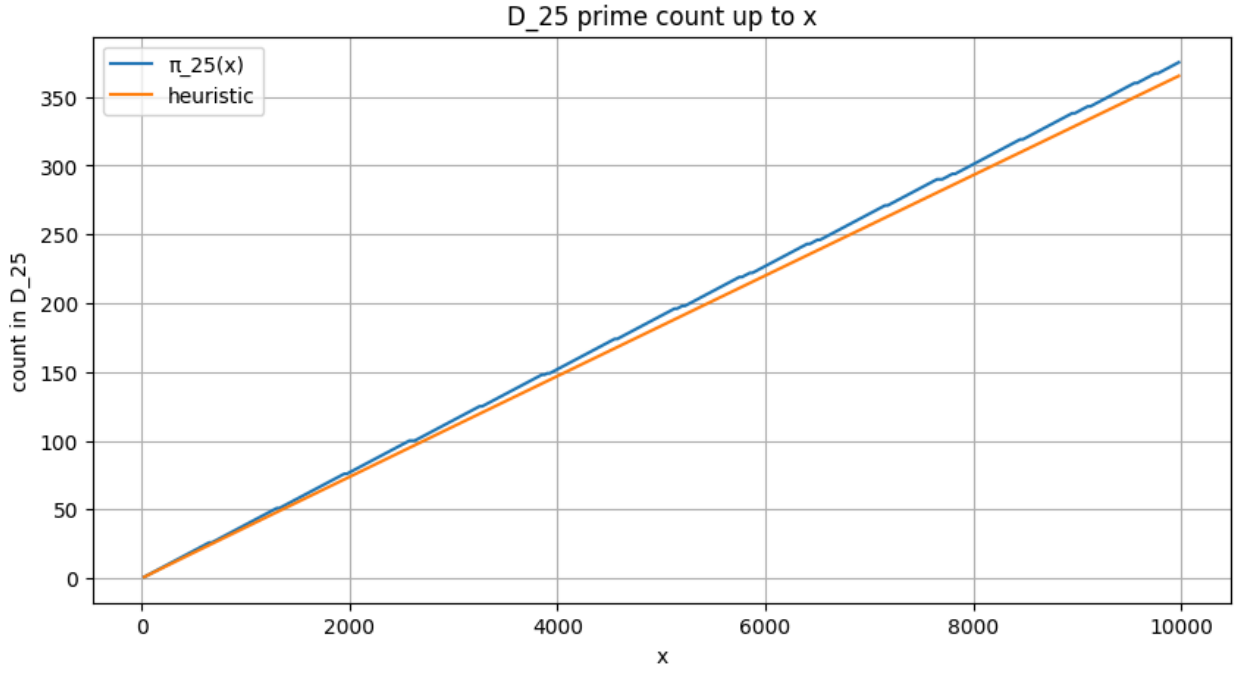
23 3.89


D_23 prime count up to x
π_23(x)
heuristic
count in D_23
x
0
50
100
150
200
250
300
350
400
0
2000
4000
6000
8000
10000

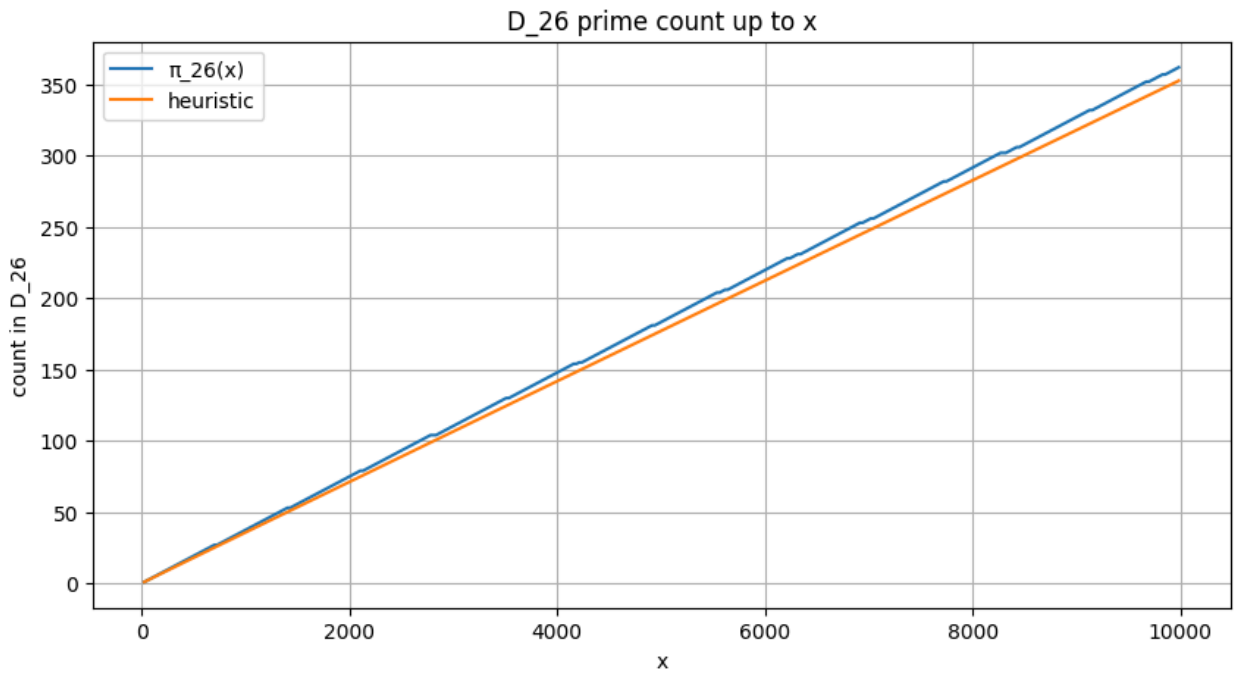
24 3.87


D_24 prime count up to x
π_24(x)
heuristic
count in D_24
x
0
50
100
150
200
250
300
350
400
0
2000
4000
6000
8000
10000

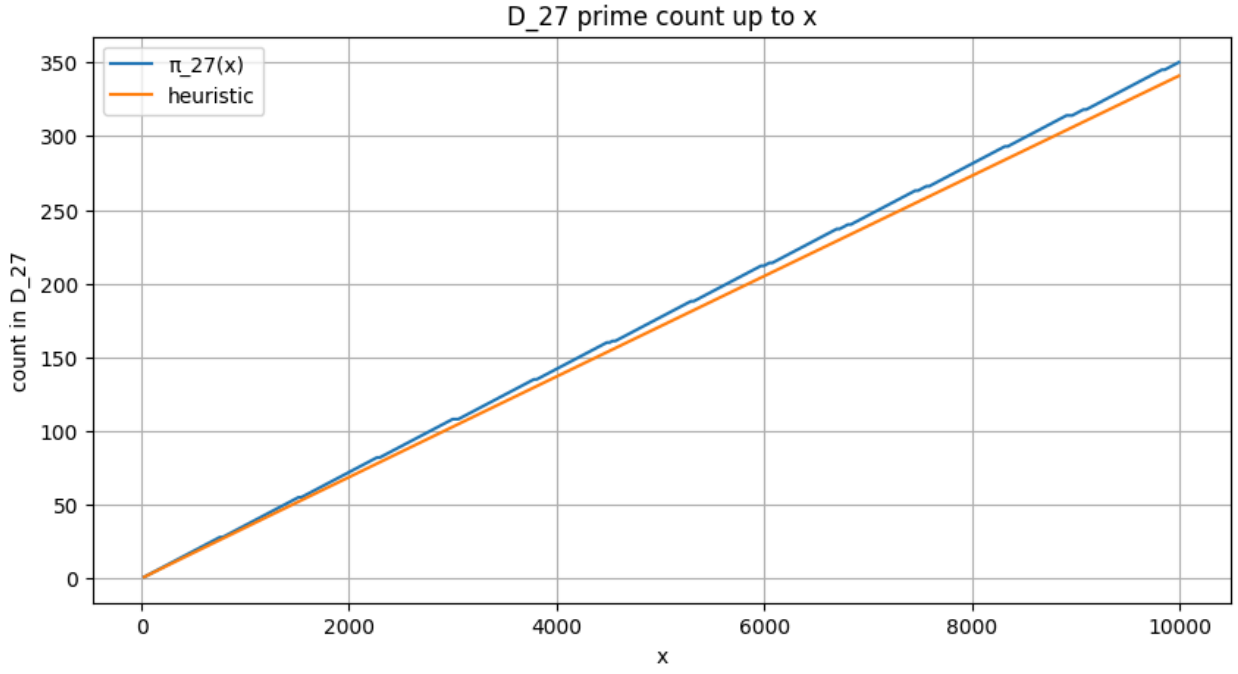
25 3.87


D_25 prime count up to x
π_25(x)
heuristic
count in D_25
x
0
50
100
150
200
250
300
350
0
2000
4000
6000
8000
10000

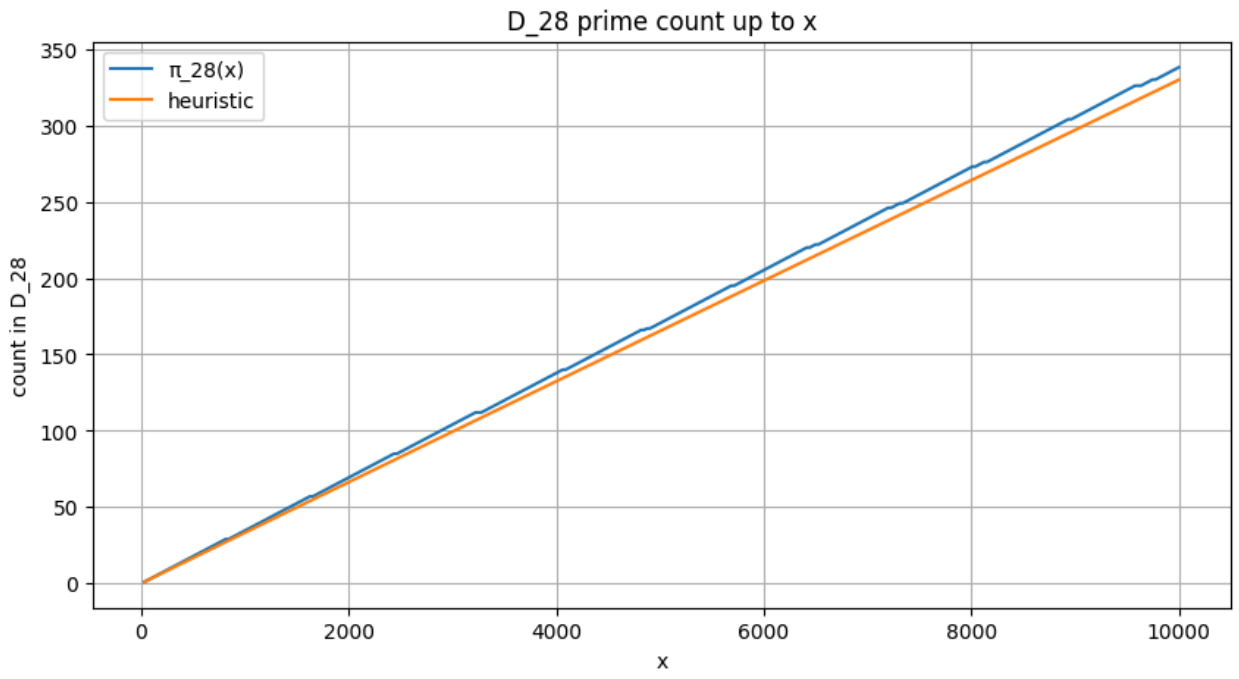
26 3.84


D_26 prime count up to x
π_26(x)
heuristic
count in D_26
x
0
50
100
150
200
250
300
350
0
2000
4000
6000
8000
10000

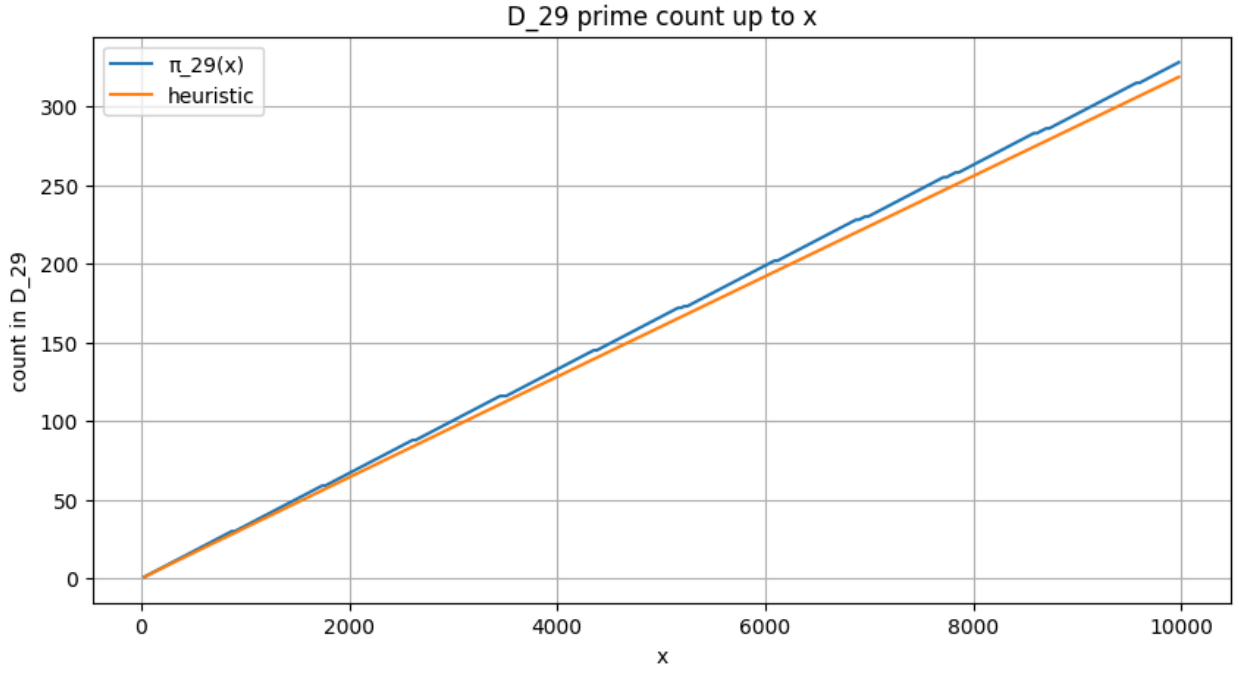
27 3.80


D_27 prime count up to x
π_27(x)
heuristic
count in D_27
x
0
50
100
150
200
250
300
350
0
2000
4000
6000
8000
10000

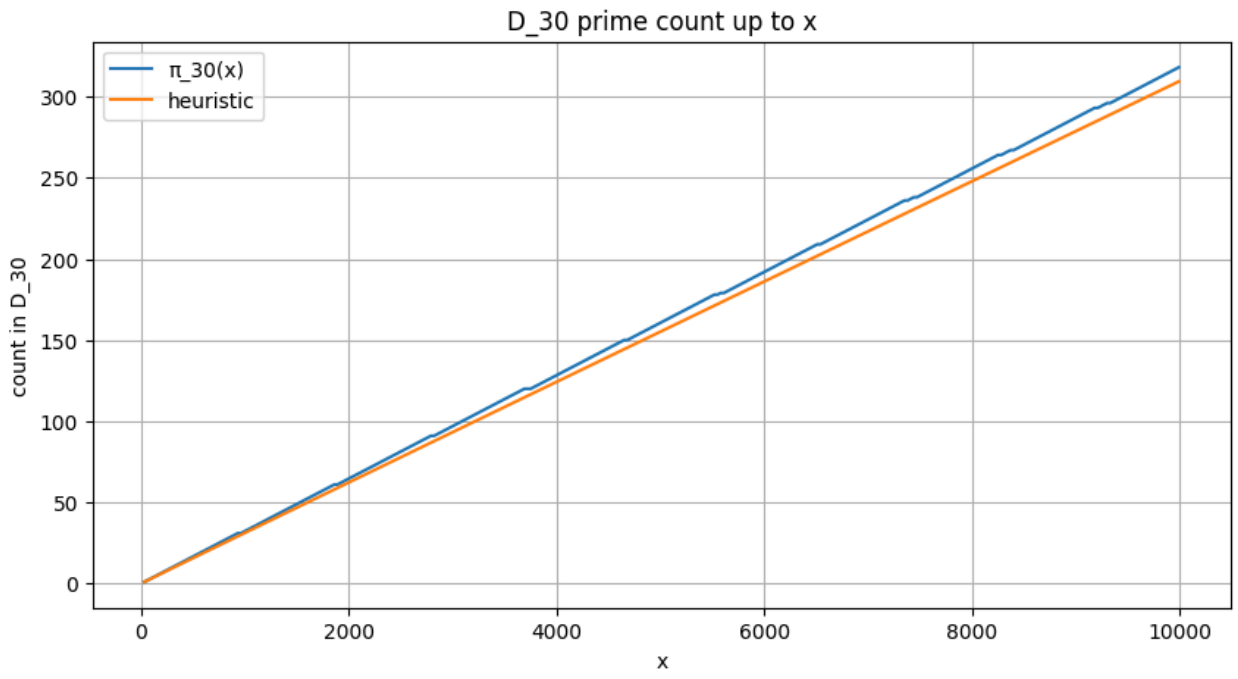
28 3.77


D_28 prime count up to x
π_28(x)
heuristic
count in D_28
x
0
50
100
150
200
250
300
350
0
2000
4000
6000
8000
10000

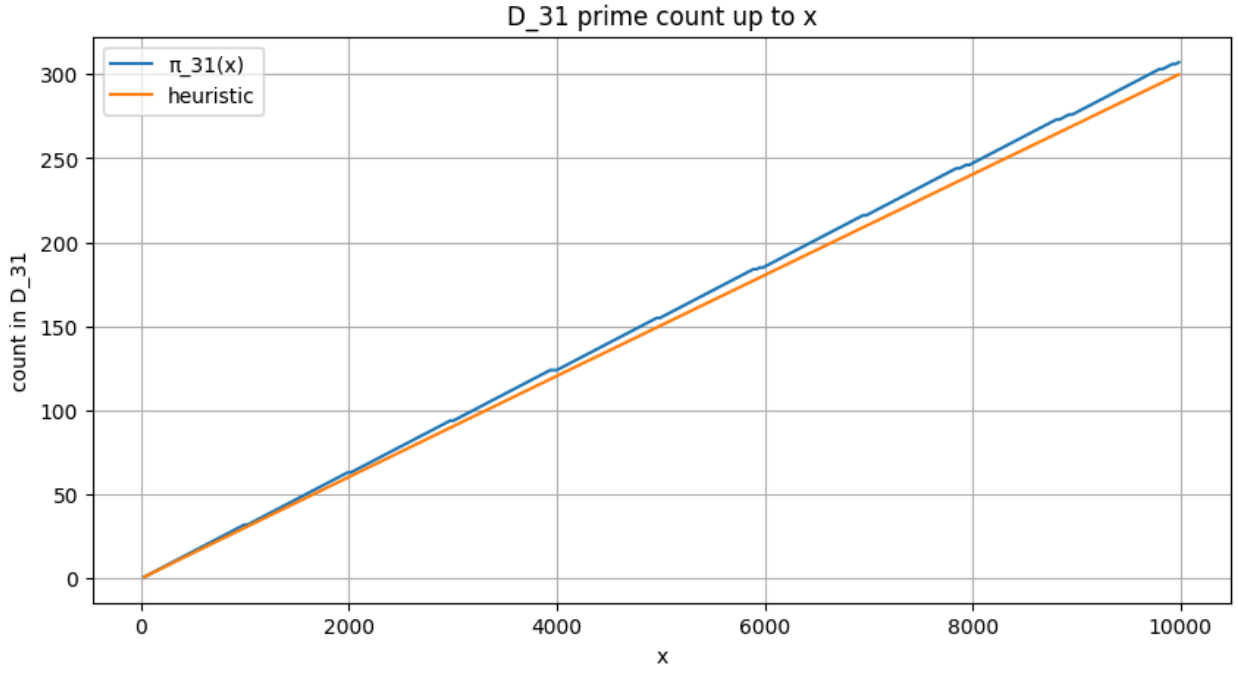
29 3.75


D_29 prime count up to x
π_29(x)
heuristic
count in D_29
x
0
50
100
150
200
250
300
0
2000
4000
6000
8000
10000

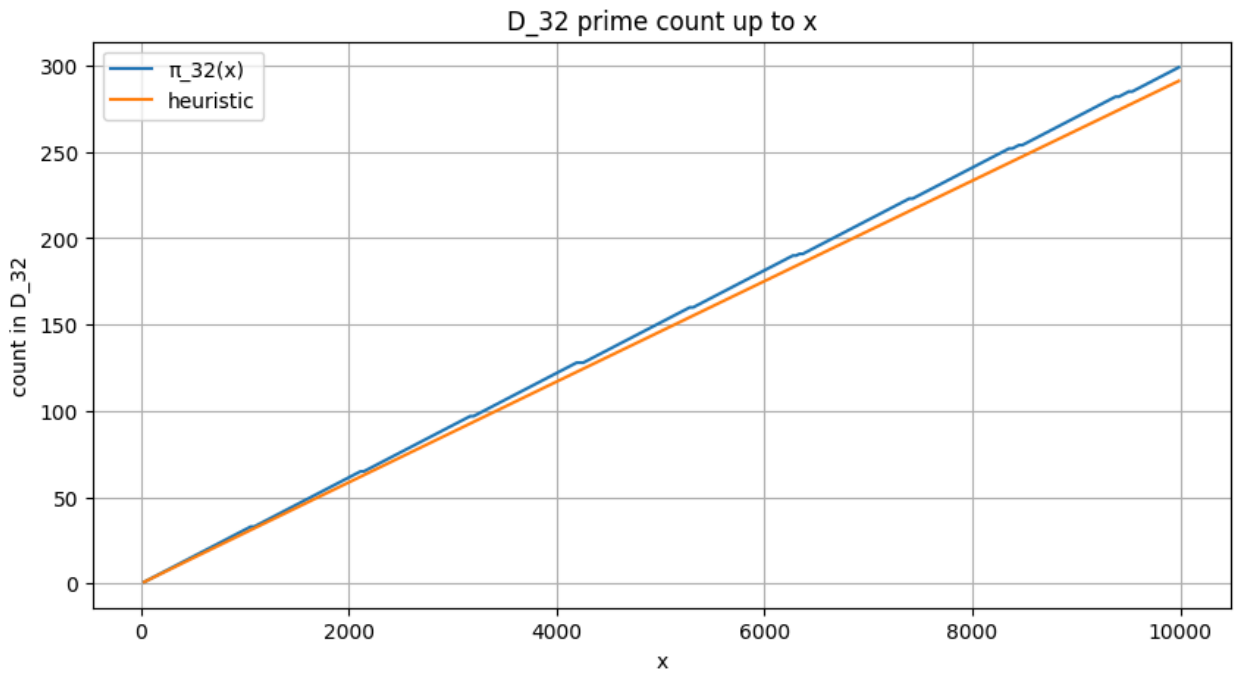
30 3.70


D_30 prime count up to x
π_30(x)
heuristic
count in D_30
x
0
50
100
150
200
250
300
0
2000
4000
6000
8000
10000

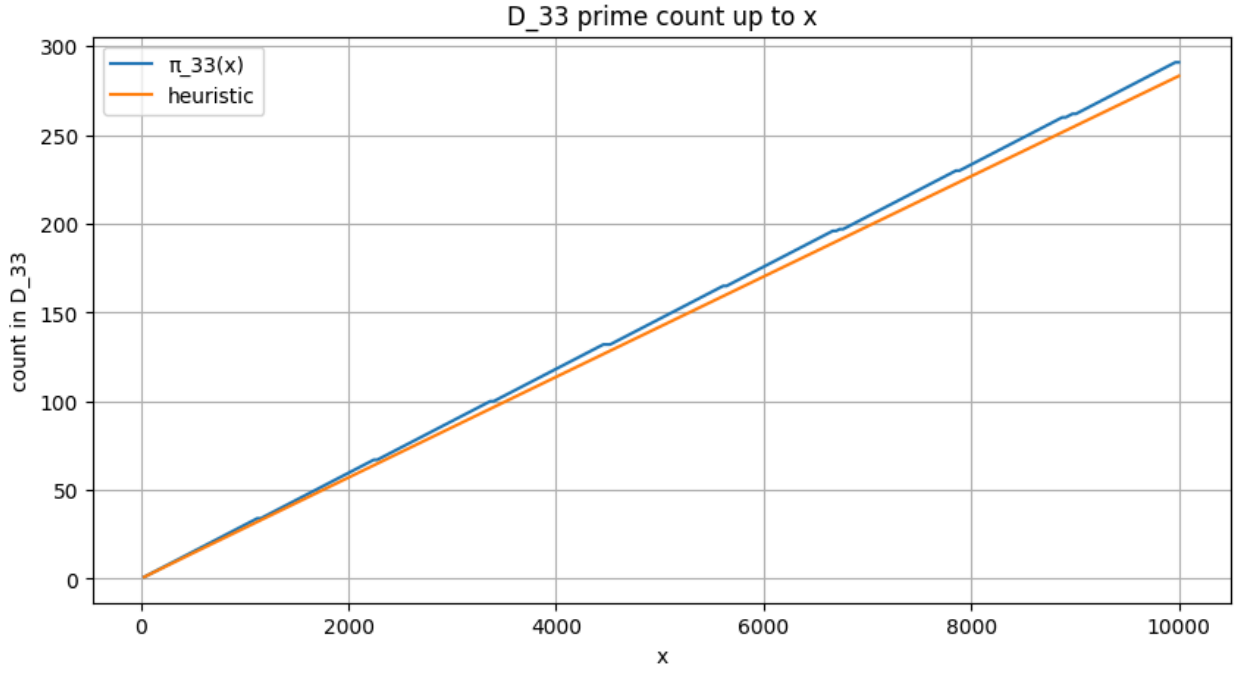
31 3.68


D_31 prime count up to x
π_31(x)
heuristic
count in D_31
x
0
50
100
150
200
250
300
0
2000
4000
6000
8000
10000

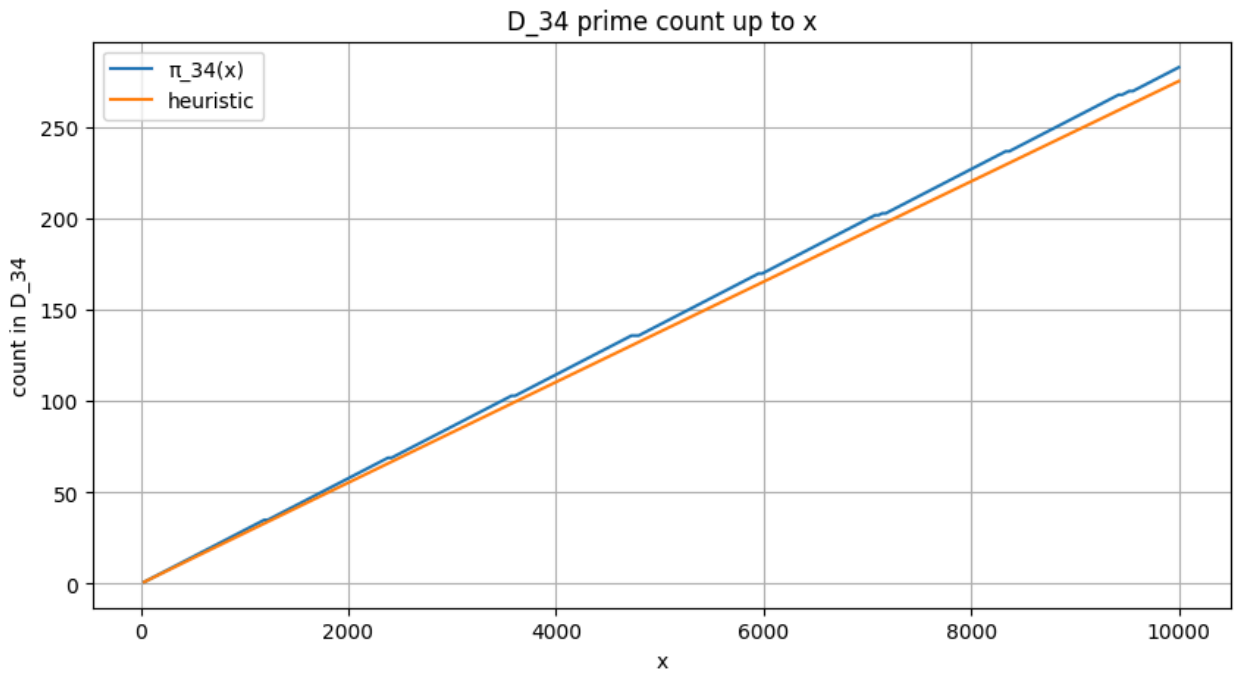
32 3.64


D_32 prime count up to x
π_32(x)
heuristic
count in D_32
x
0
50
100
150
200
250
300
0
2000
4000
6000
8000
10000

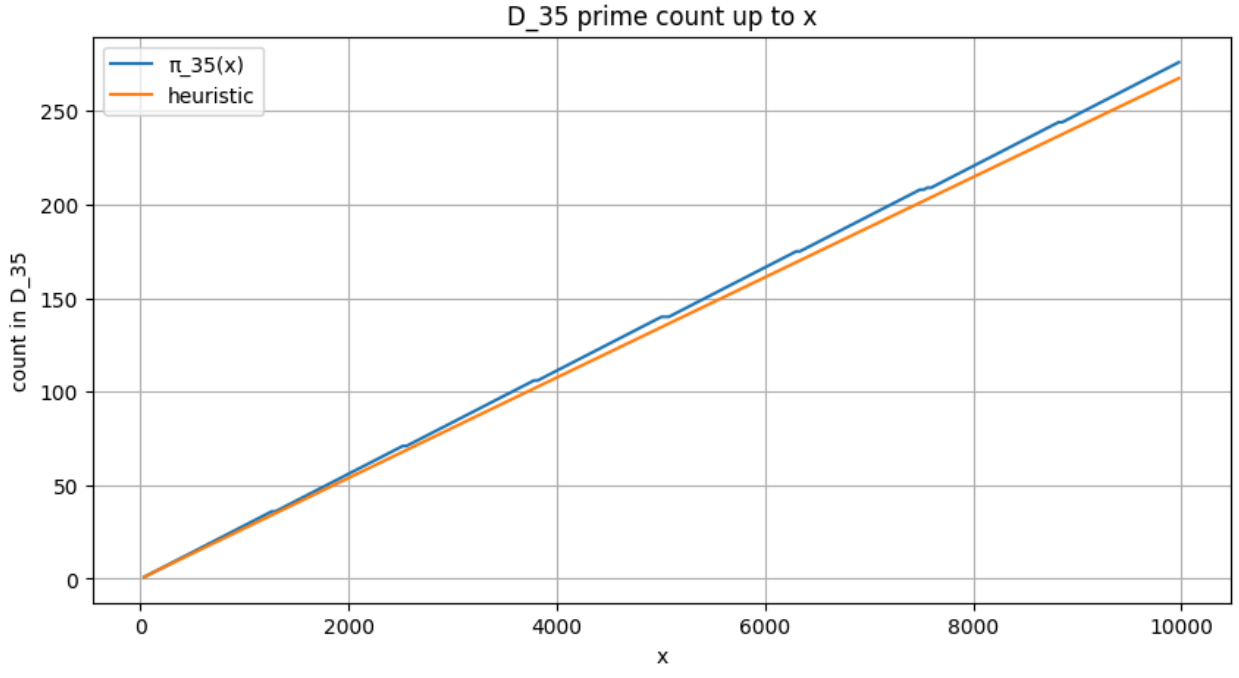
33 3.61


D_33 prime count up to x
π_33(x)
heuristic
count in D_33
x
0
50
100
150
200
250
300
0
2000
4000
6000
8000
10000

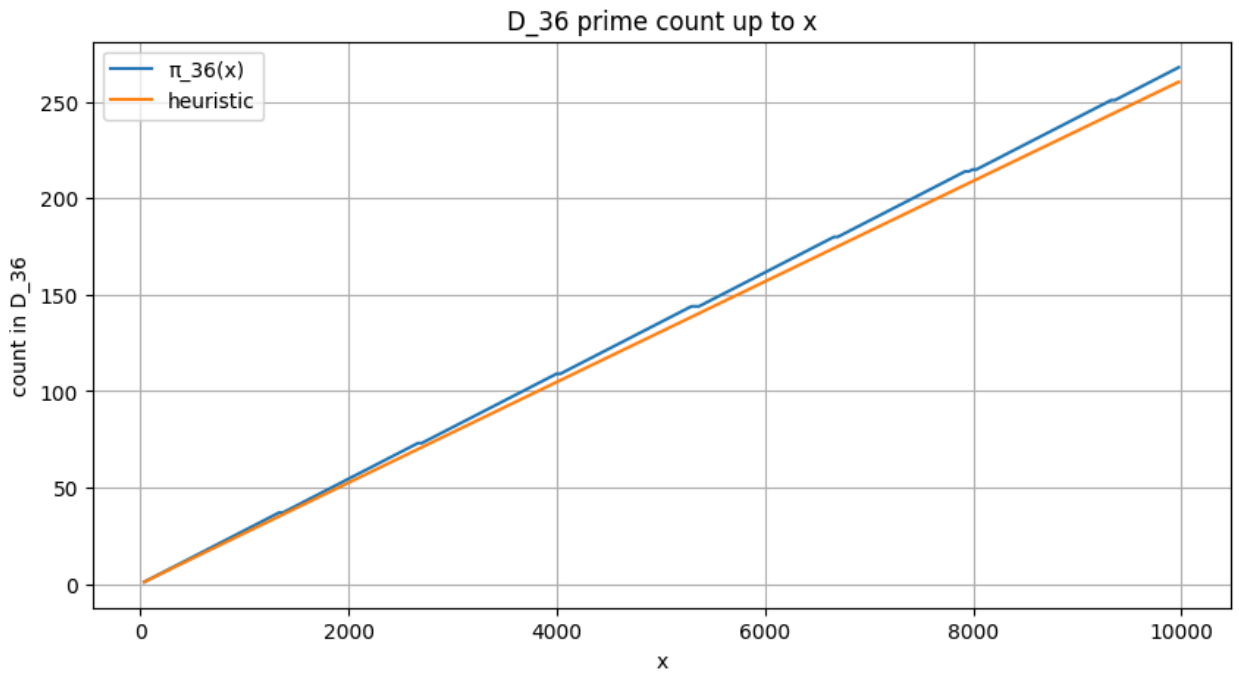
34 3.57


D_34 prime count up to x
π_34(x)
heuristic
count in D_34
x
0
50
100
150
200
250
0
2000
4000
6000
8000
10000

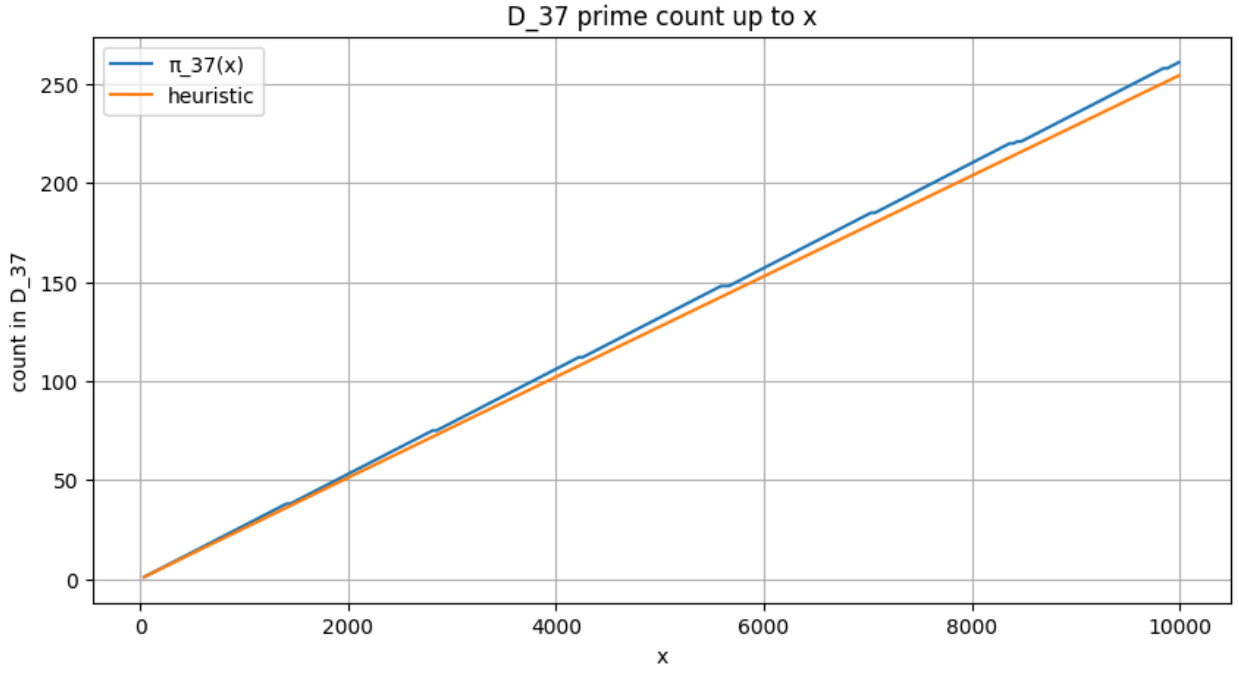
35 3.54


D_35 prime count up to x
π_35(x)
heuristic
count in D_35
x
0
50
100
150
200
250
0
2000
4000
6000
8000
10000

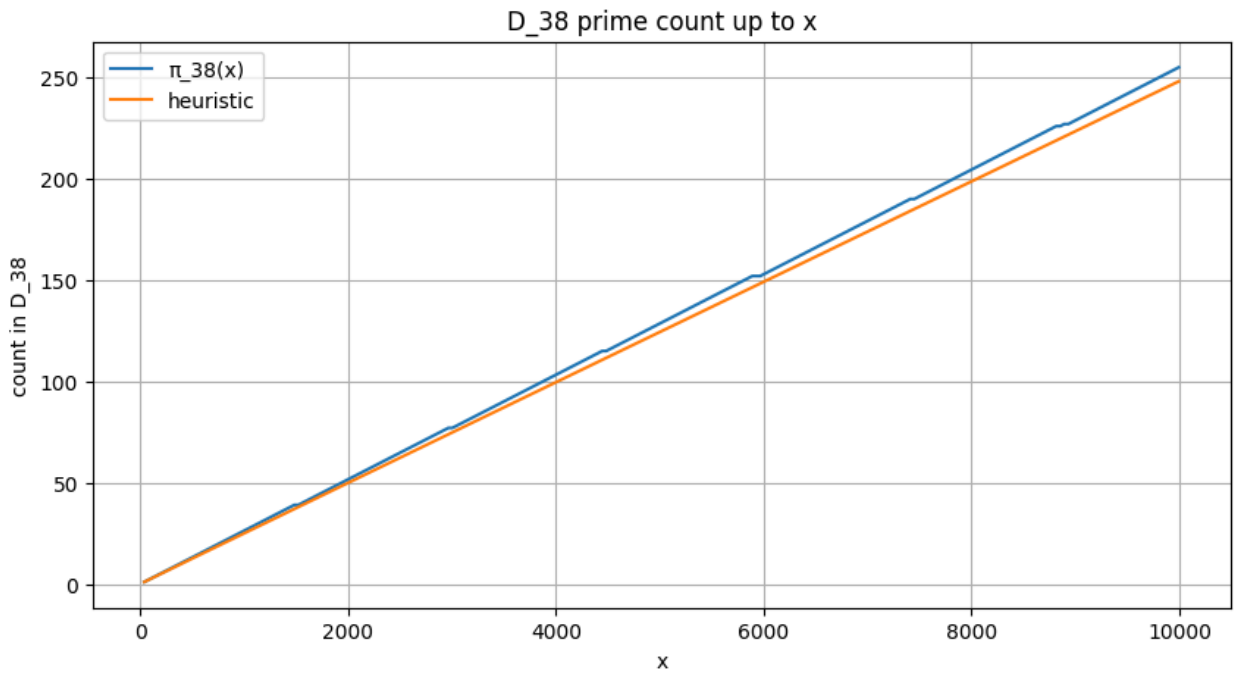
36 3.48


D_36 prime count up to x
π_36(x)
heuristic
count in D_36
x
0
50
100
150
200
250
0
2000
4000
6000
8000
10000

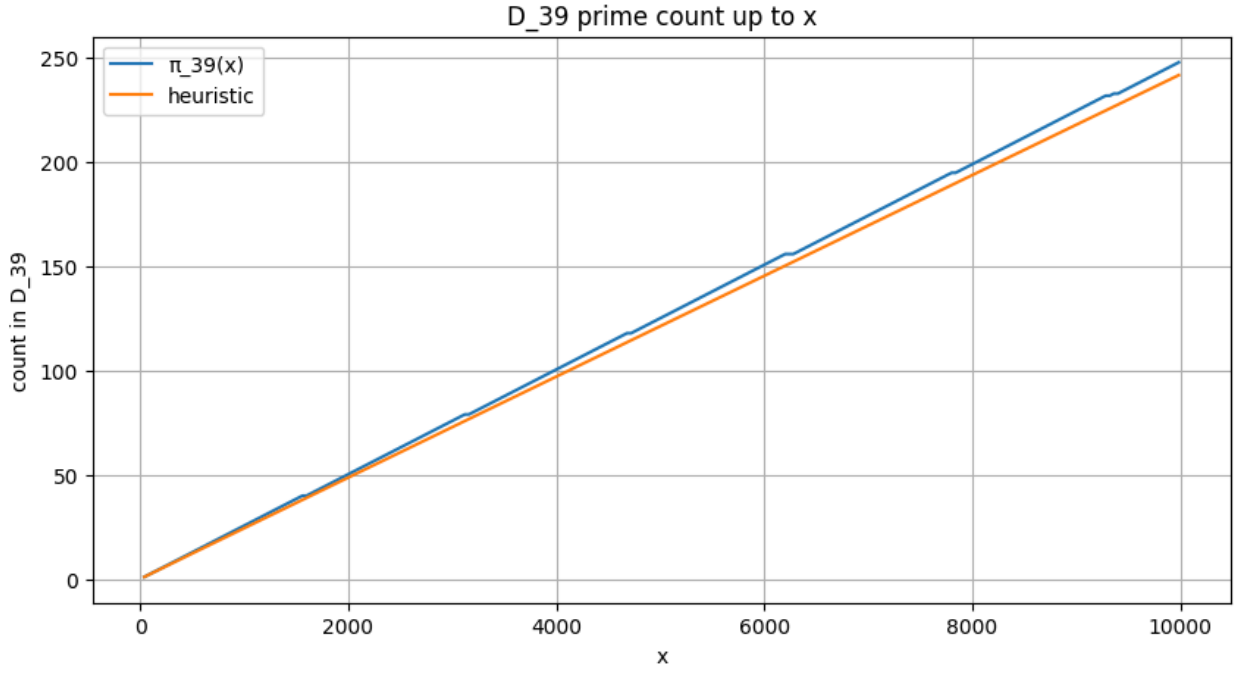
37 3.44


D_37 prime count up to x
π_37(x)
heuristic
count in D_37
x
0
50
100
150
200
250
0
2000
4000
6000
8000
10000

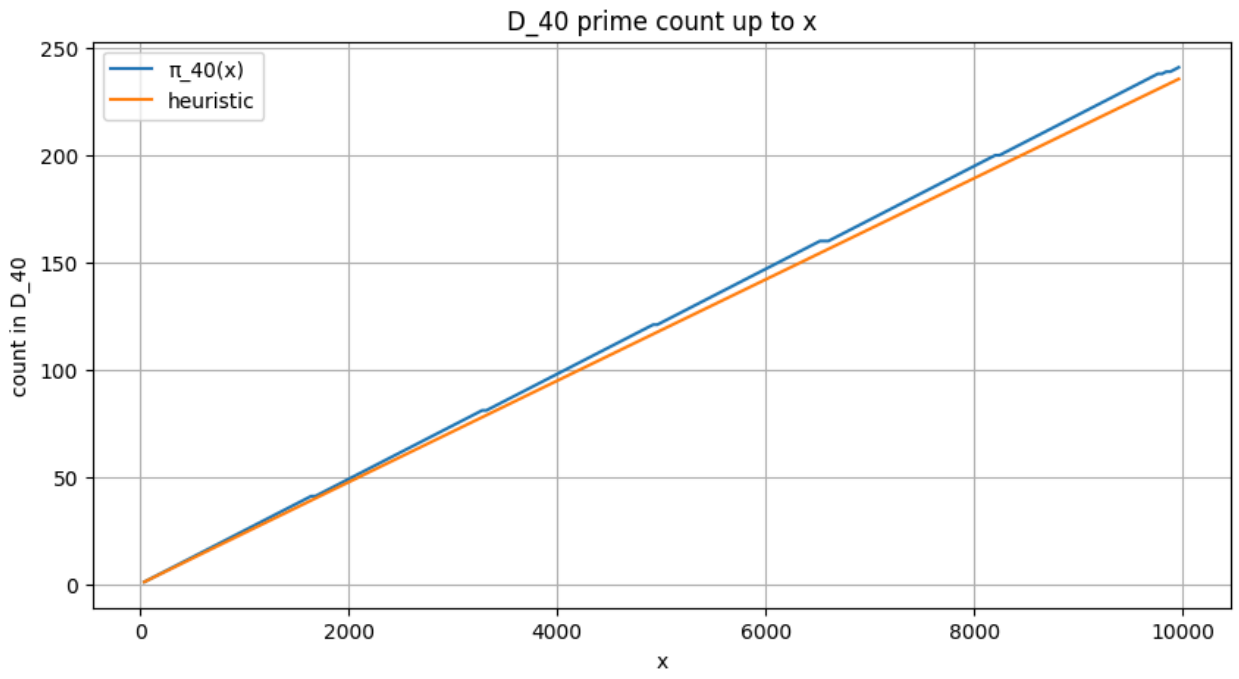
38 3.40


D_38 prime count up to x
π_38(x)
heuristic
count in D_38
x
0
50
100
150
200
250
0
2000
4000
6000
8000
10000

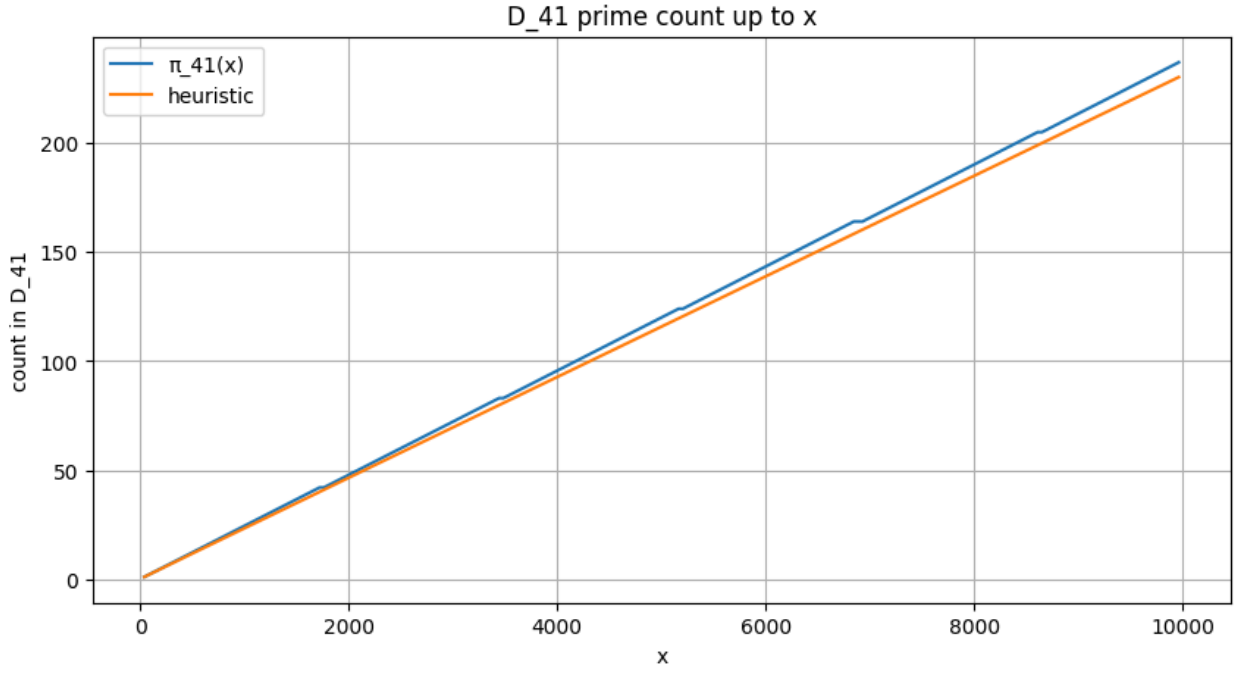
39 3.37


D_39 prime count up to x
π_39(x)
heuristic
count in D_39
x
0
50
100
150
200
250
0
2000
4000
6000
8000
10000

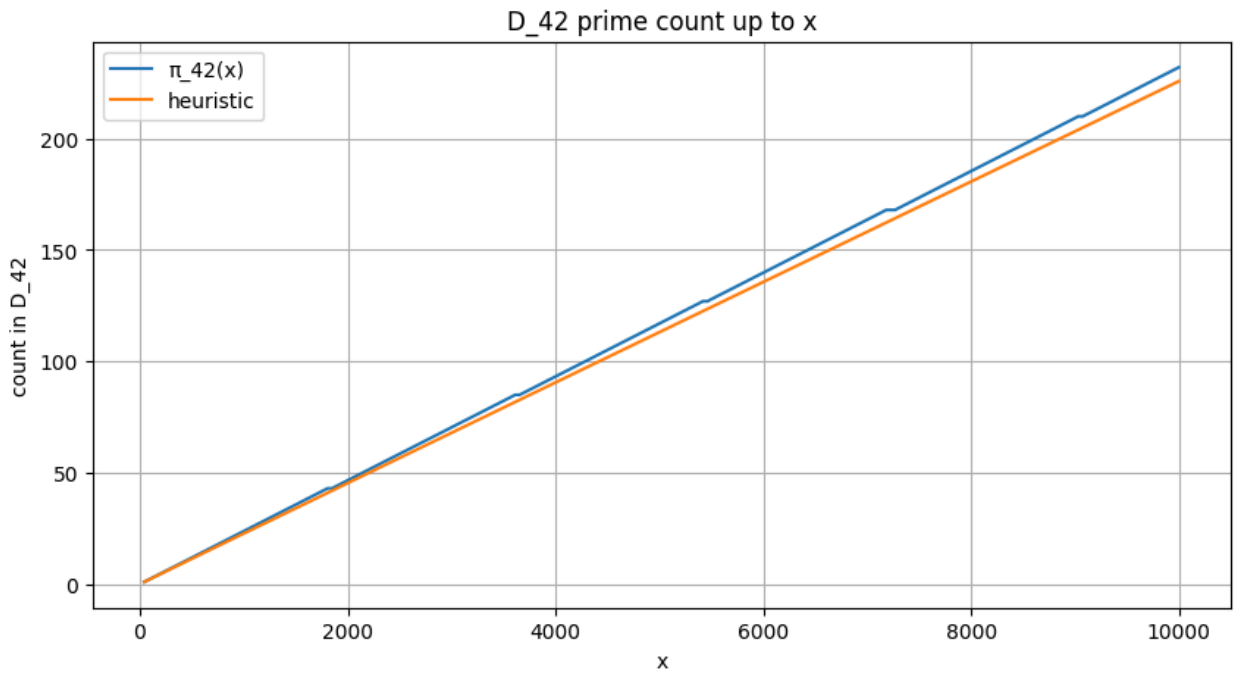
40 3.35


D_40 prime count up to x
π_40(x)
heuristic
count in D_40
x
0
50
100
150
200
250
0
2000
4000
6000
8000
10000

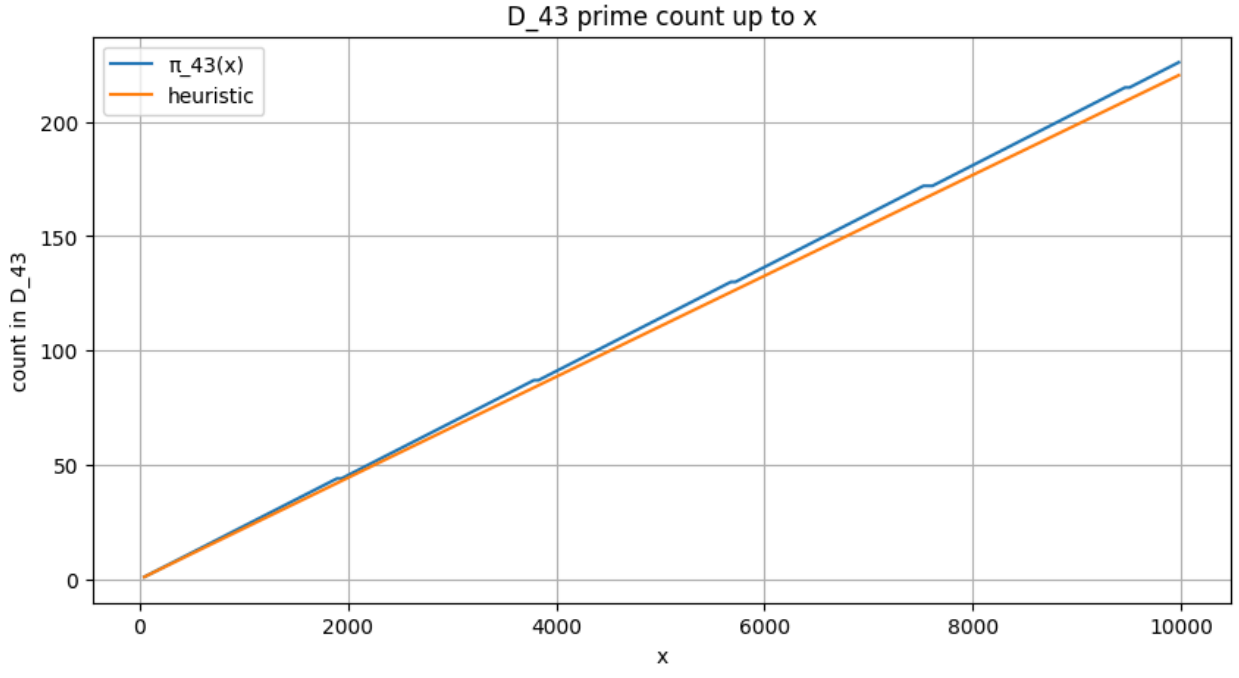
41 3.30


D_41 prime count up to x
π_41(x)
heuristic
count in D_41
x
0
50
100
150
200
0
2000
4000
6000
8000
10000

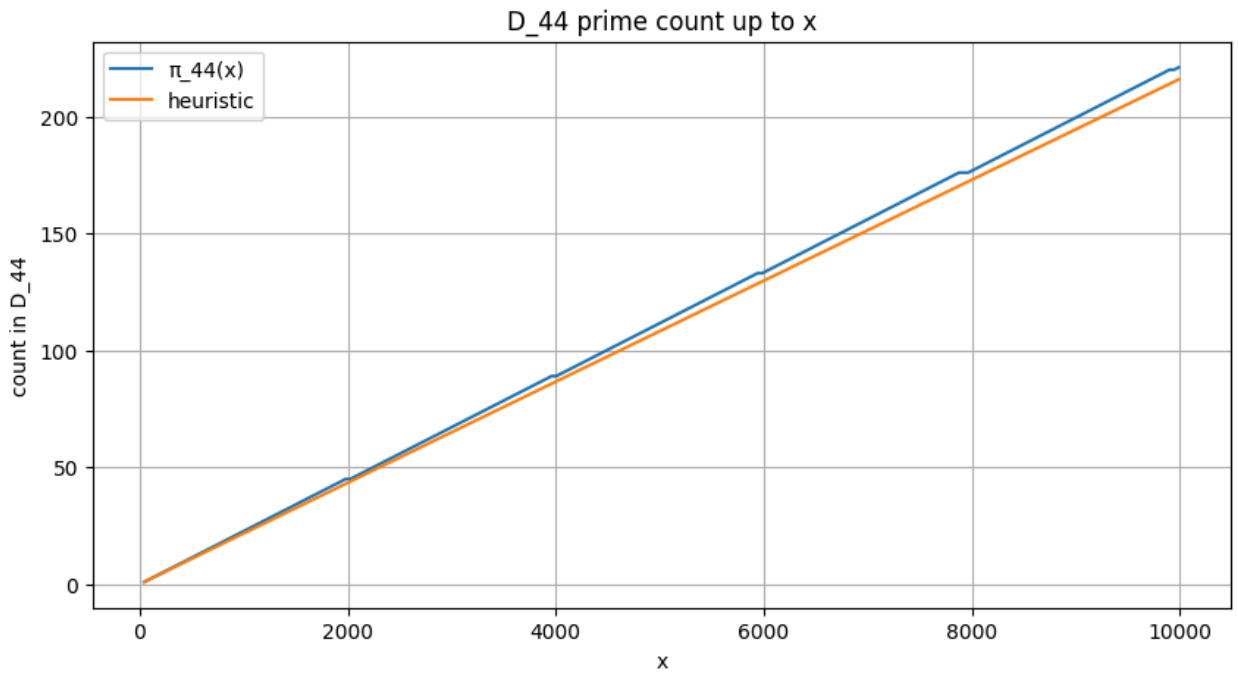
42 3.26


D_42 prime count up to x
π_42(x)
heuristic
count in D_42
x
0
50
100
150
200
0
2000
4000
6000
8000
10000

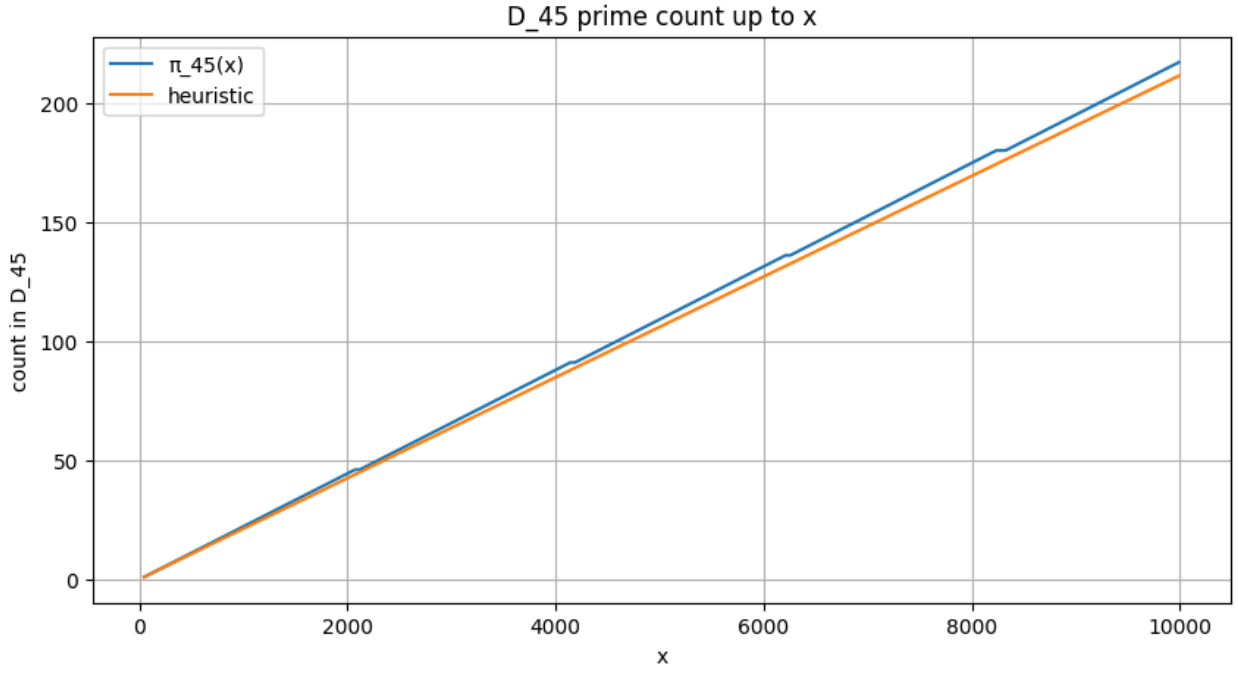
43 3.22


D_43 prime count up to x
π_43(x)
heuristic
count in D_43
x
0
50
100
150
200
0
2000
4000
6000
8000
10000

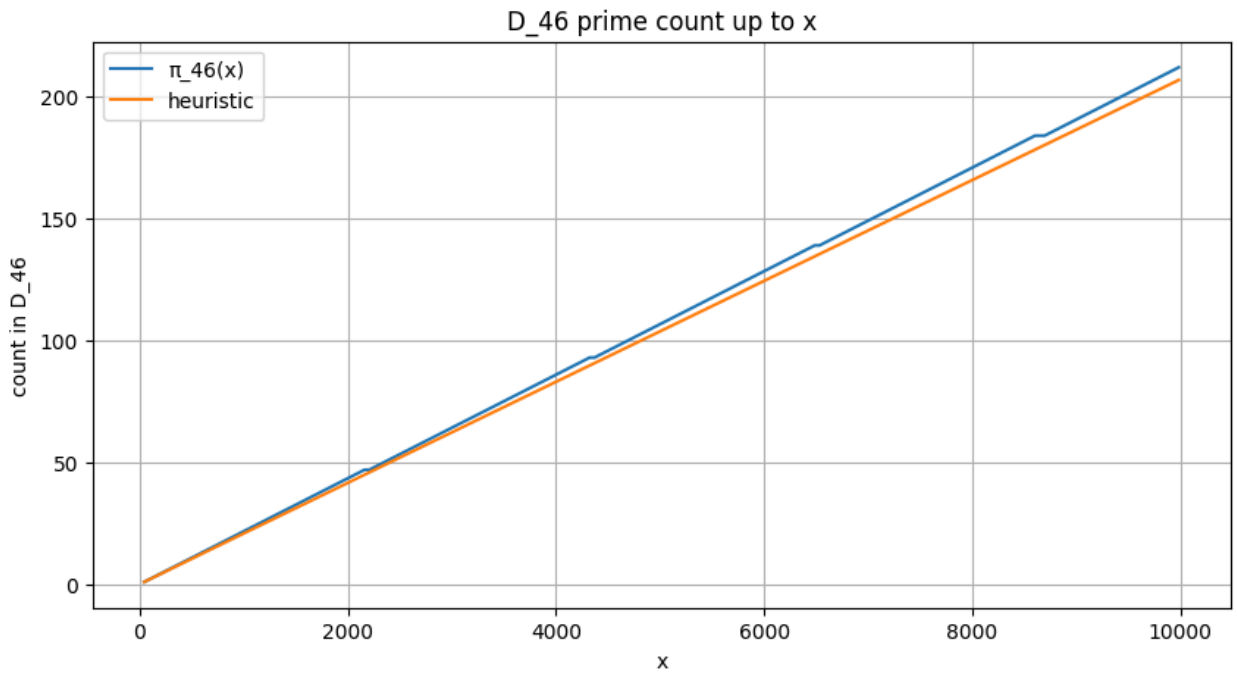
44 3.19


D_44 prime count up to x
π_44(x)
heuristic
count in D_44
x
0
50
100
150
200
0
2000
4000
6000
8000
10000

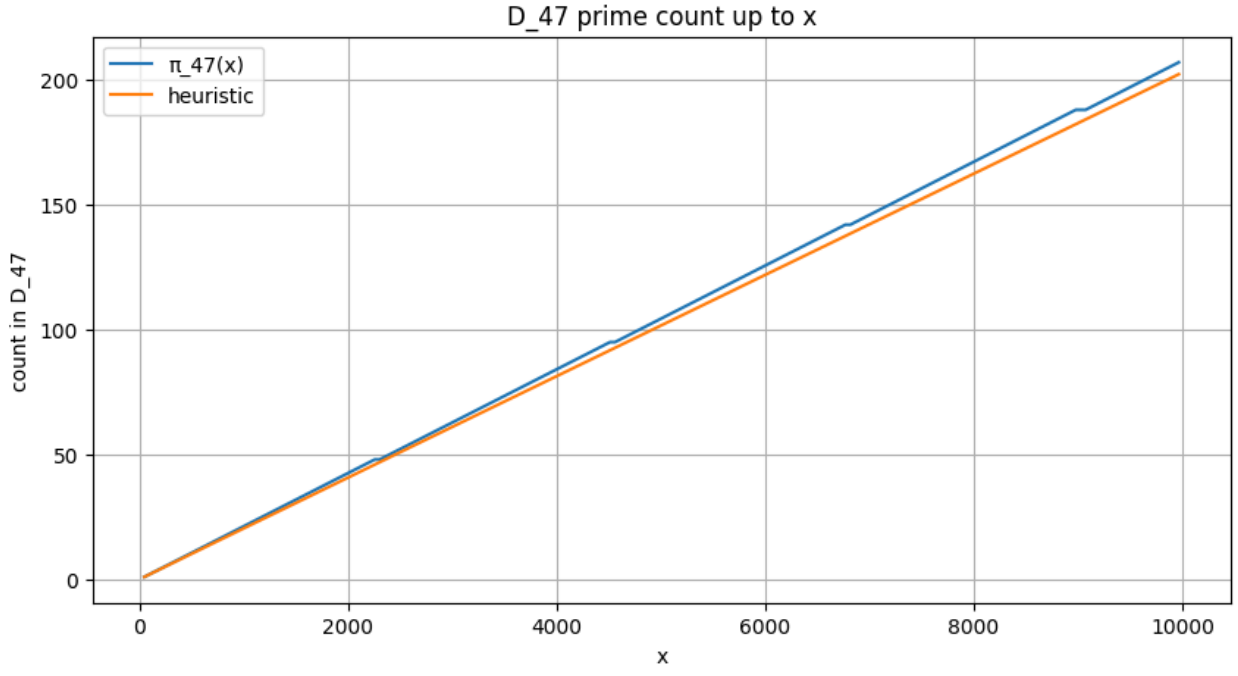
45 3.16


D_45 prime count up to x
π_45(x)
heuristic
count in D_45
x
0
50
100
150
200
0
2000
4000
6000
8000
10000

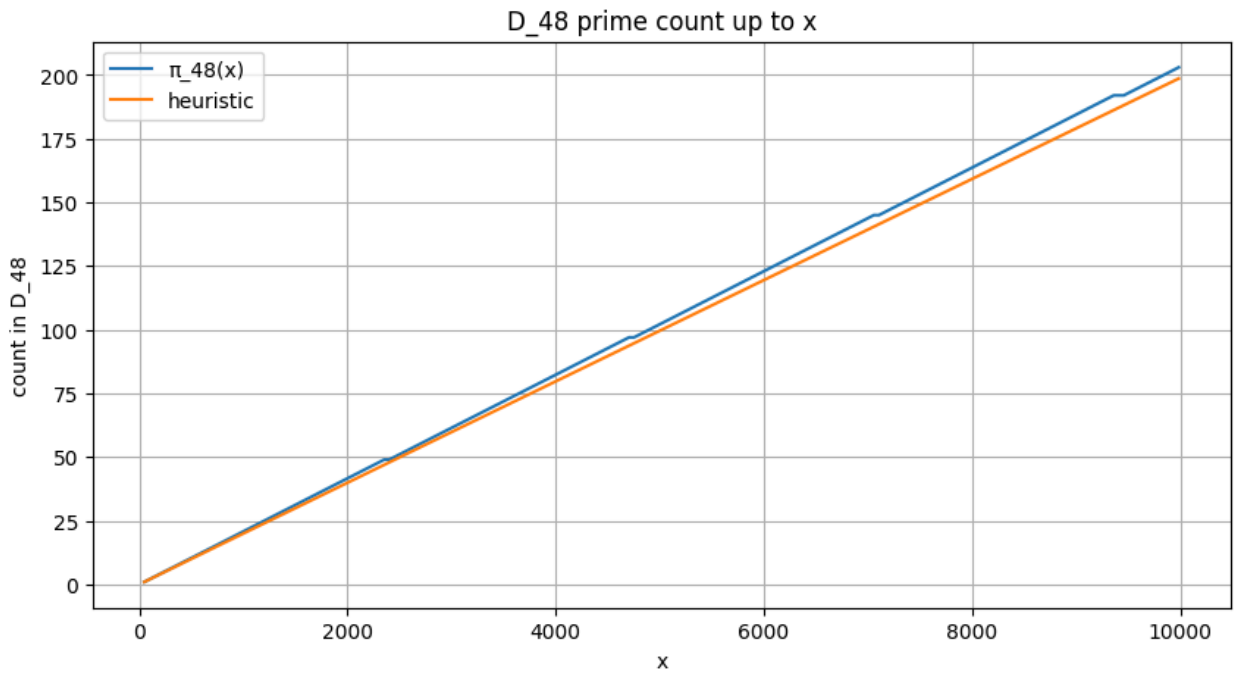
46 3.12


D_46 prime count up to x
π_46(x)
heuristic
count in D_46
x
0
50
100
150
200
0
2000
4000
6000
8000
10000

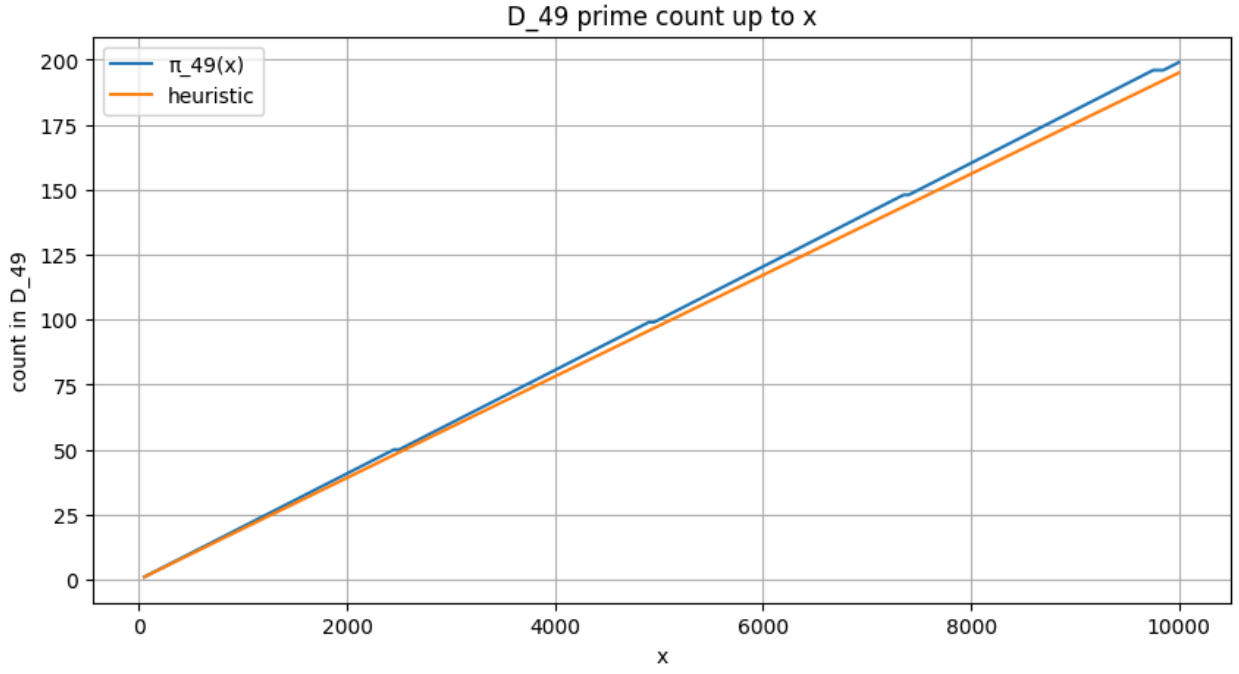
47 3.10


D_47 prime count up to x
π_47(x)
heuristic
count in D_47
x
0
50
100
150
200
0
2000
4000
6000
8000
10000

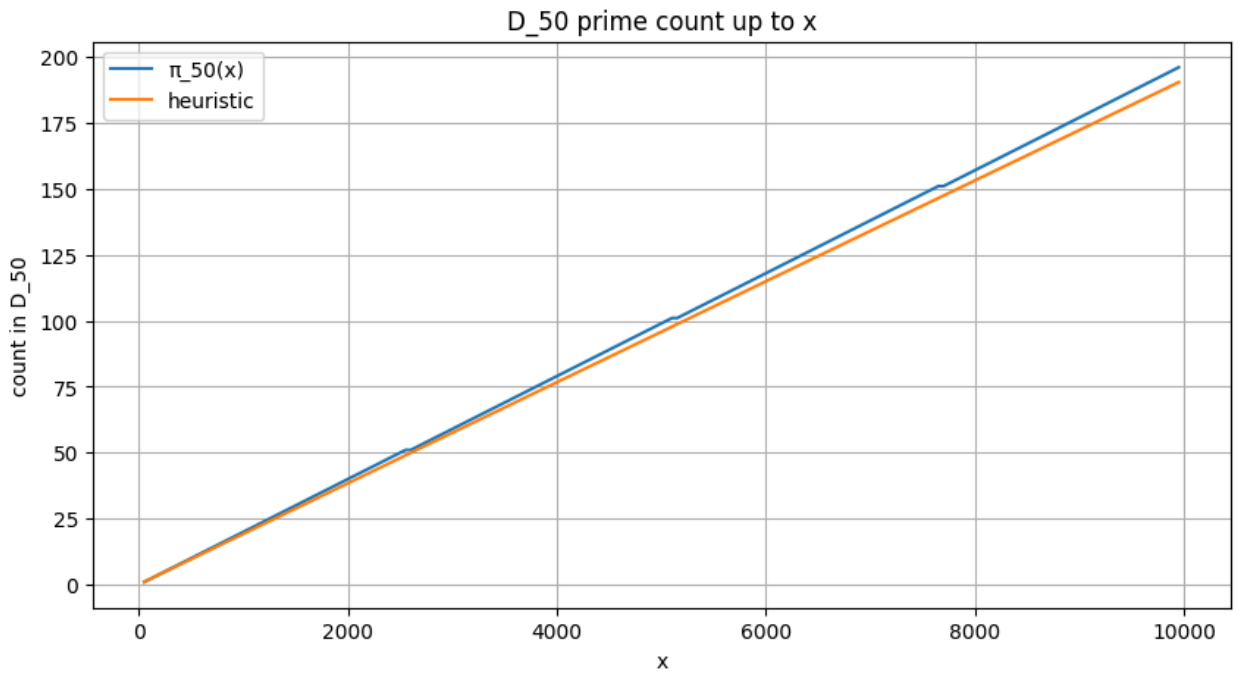
48 3.07


D_48 prime count up to x
π_48(x)
heuristic
count in D_48
x
0
25
50
75
100
125
150
175
200
0
2000
4000
6000
8000
10000

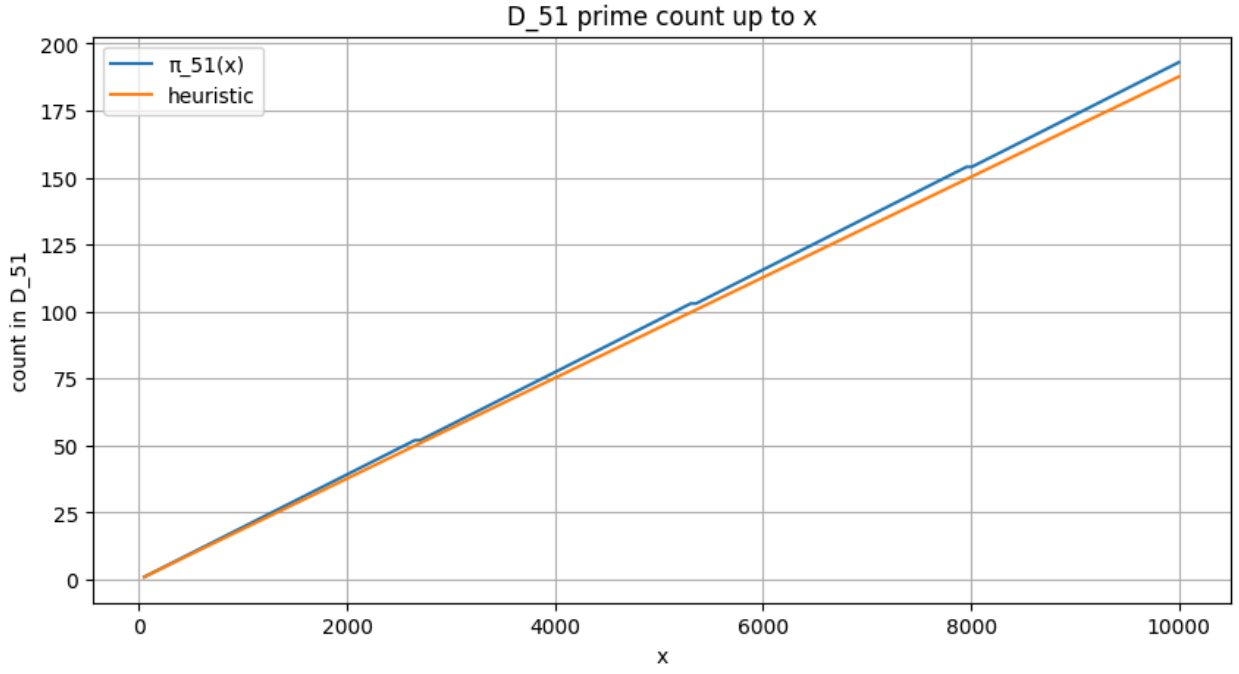
49 3.06


D_49 prime count up to x
π_49(x)
heuristic
count in D_49
x
0
25
50
75
100
125
150
175
200
0
2000
4000
6000
8000
10000

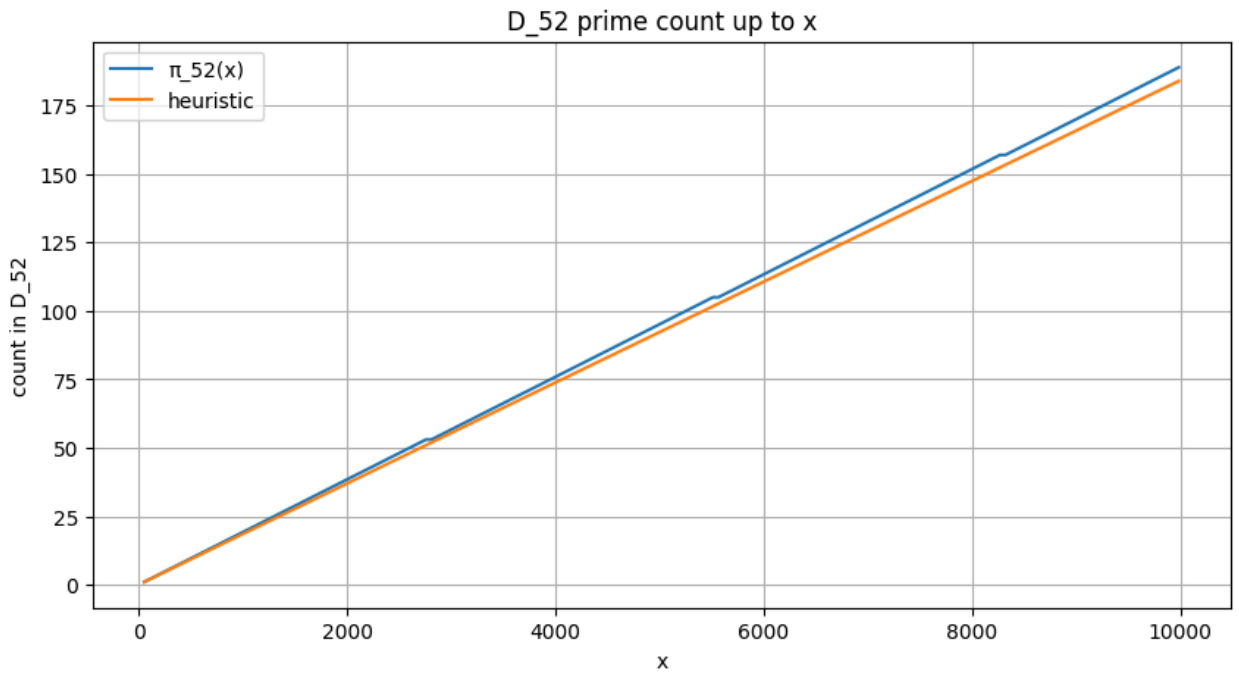
50 3.03


D_50 prime count up to x
π_50(x)
heuristic
count in D_50
x
0
25
50
75
100
125
150
175
200
0
2000
4000
6000
8000
10000

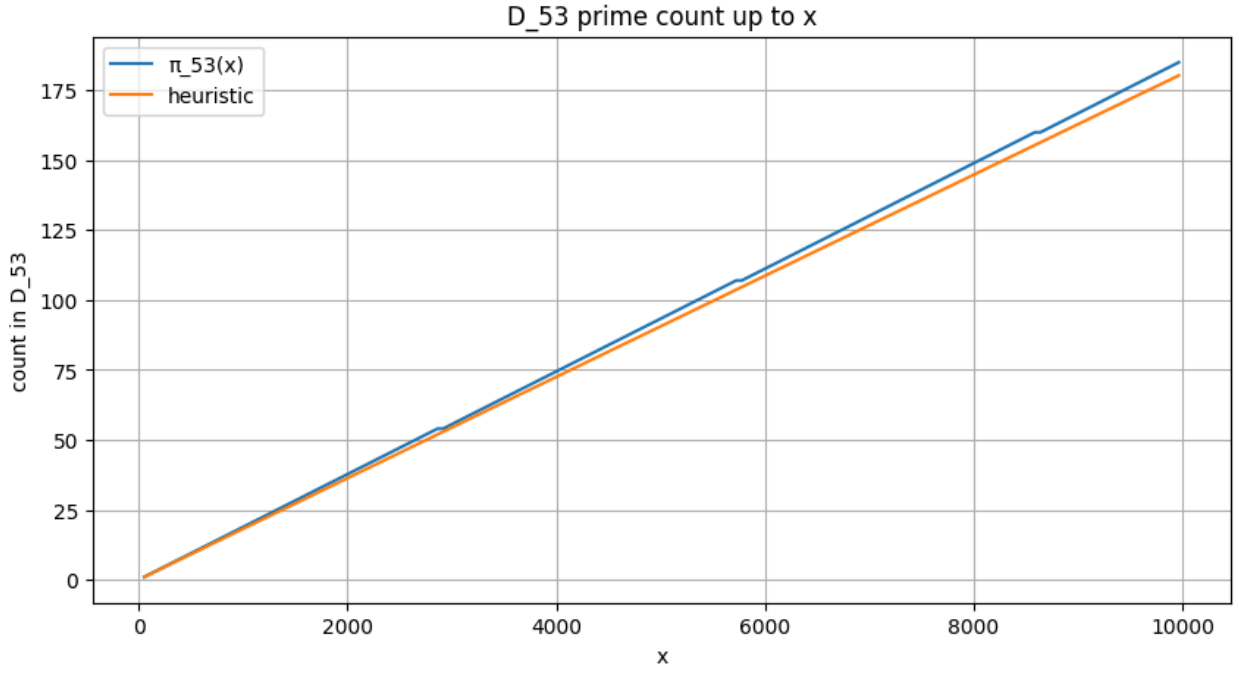
51 2.98


D_51 prime count up to x
π_51(x)
heuristic
count in D_51
x
0
25
50
75
100
125
150
175
200
0
2000
4000
6000
8000
10000

52 2.94


D_52 prime count up to x
π_52(x)
heuristic
count in D_52
x
0
25
50
75
100
125
150
175
0
2000
4000
6000
8000
10000

53 2.91


D_53 prime count up to x
π_53(x)
heuristic
count in D_53
x
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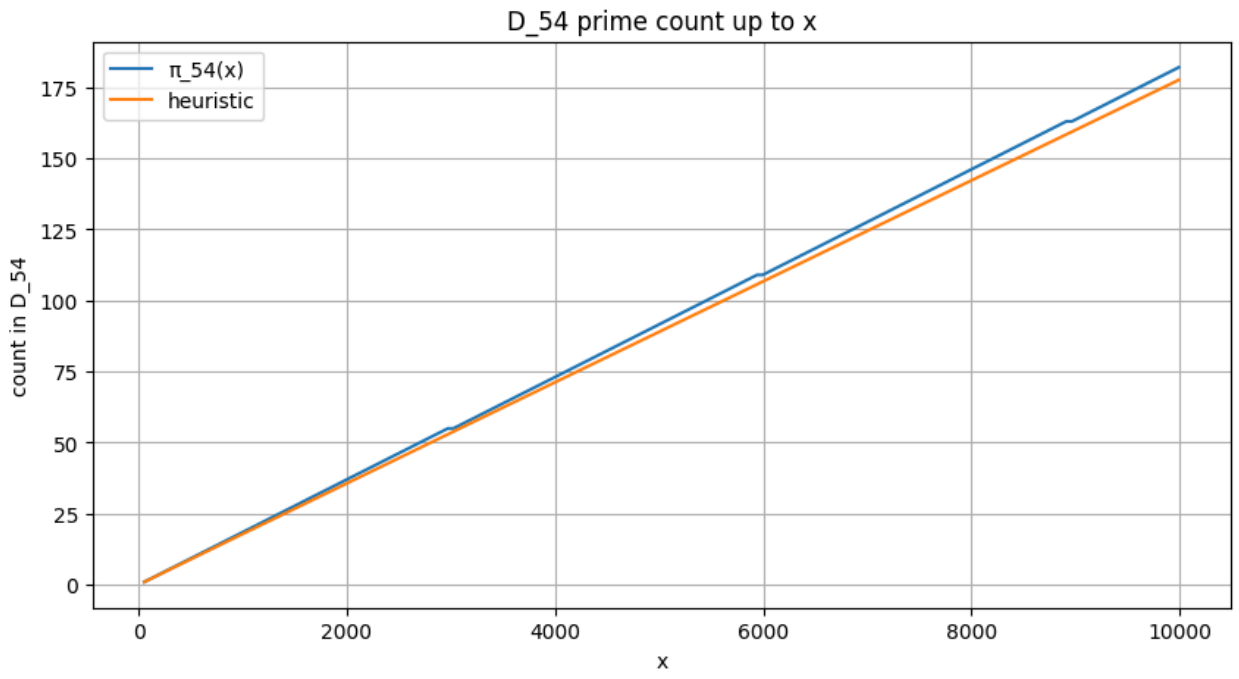
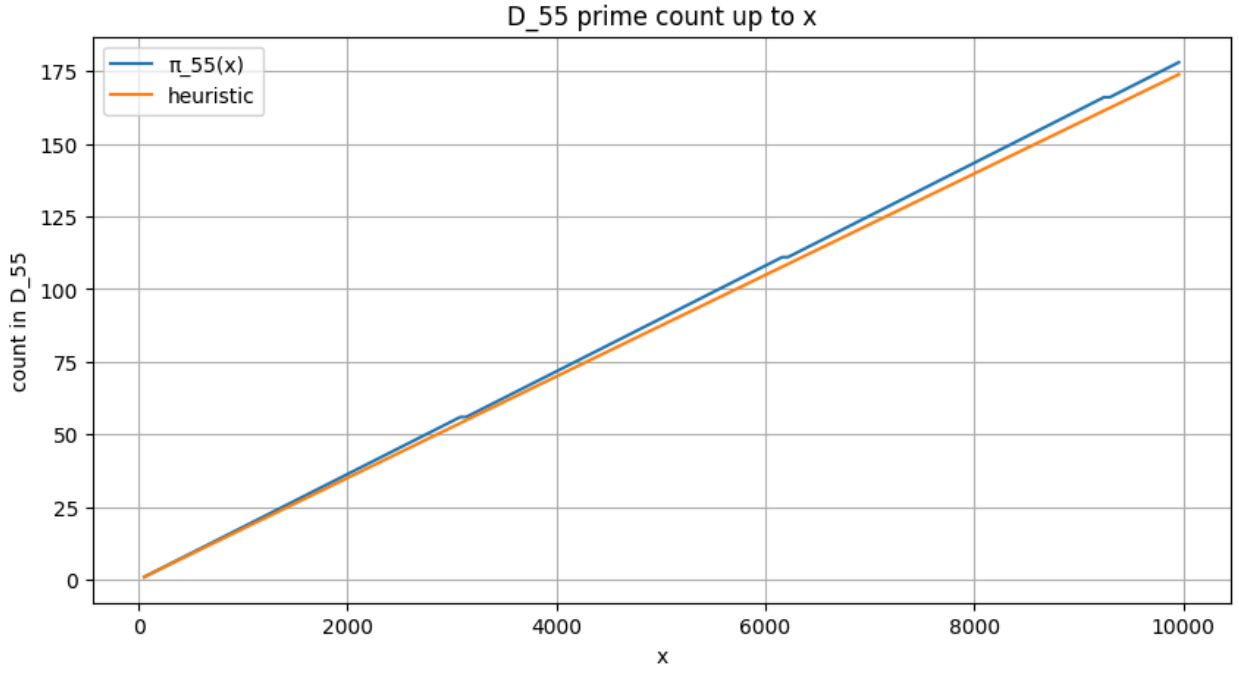
25
50
75
100
125
150
175
0
2000
4000
6000
8000
10000

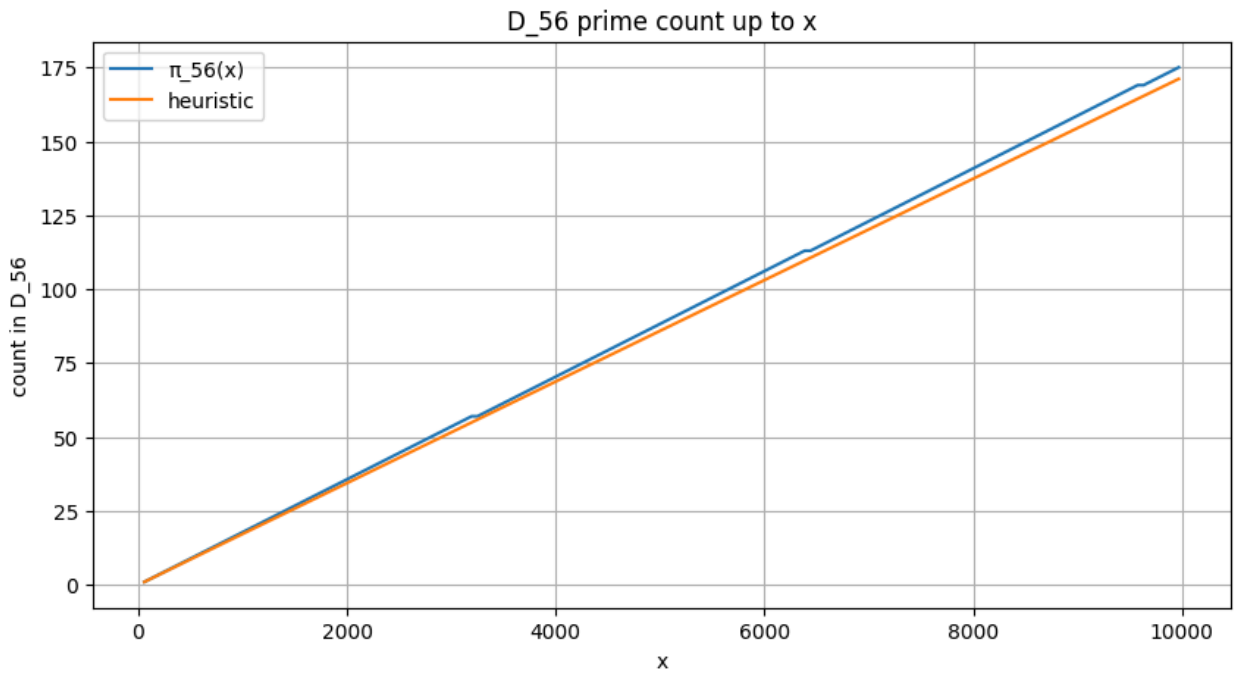
54 2.87


D_54 prime count up to x
π_54(x)
heuristic
count in D_54
x
0
25
50
75
100
125
150
175
0
2000
4000
6000
8000
10000

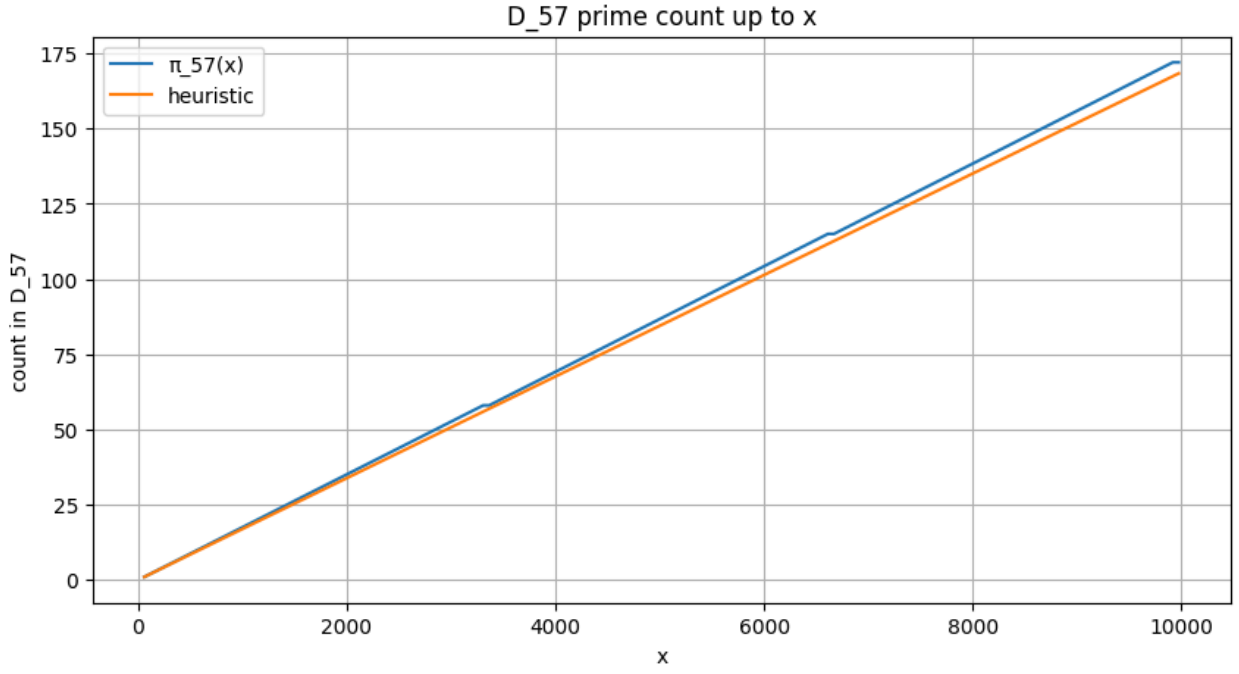
55 2.84


D_55 prime count up to x
π_55(x)
heuristic
count in D_55
x
0
25
50
75
100
125
150
175
0
2000
4000
6000
8000
10000

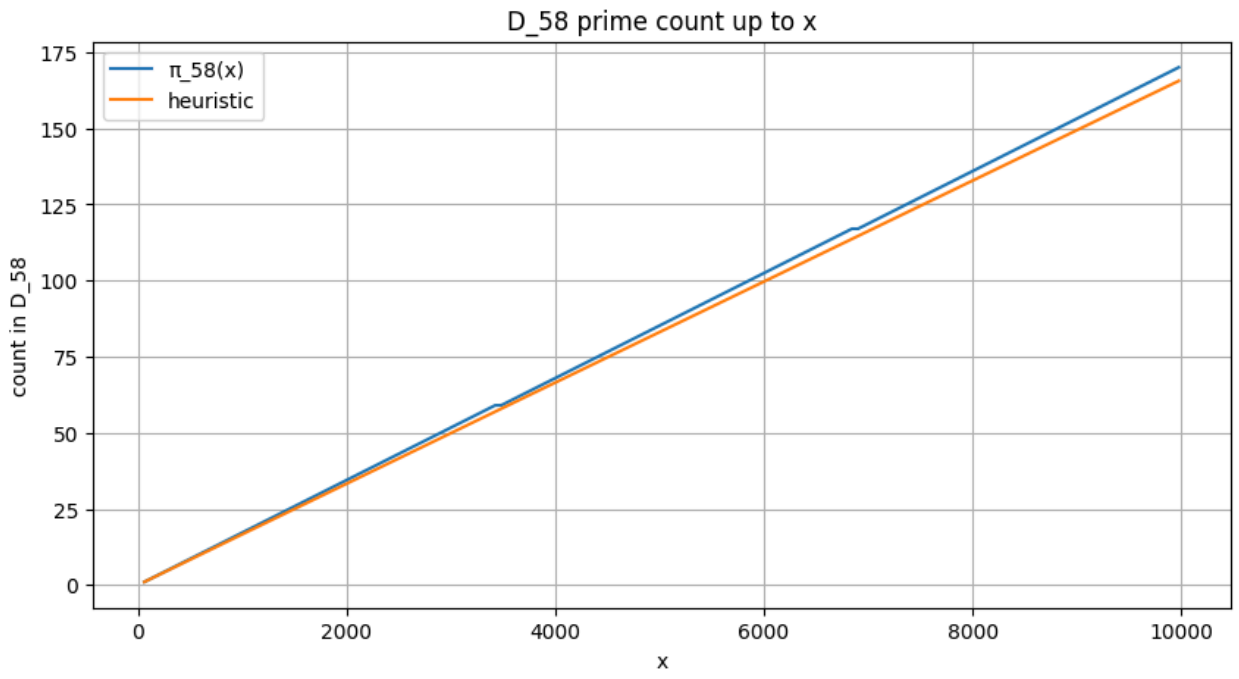
56 2.82


D_56 prime count up to x
π_56(x)
heuristic
count in D_56
x
0
25
50
75
100
125
150
175
0
2000
4000
6000
8000
10000

57 2.80


D_57 prime count up to x
π_57(x)
heuristic
count in D_57
x
0
25
50
75
100
125
150
175
0
2000
4000
6000
8000
10000

58 2.76


D_58 prime count up to x
π_58(x)
heuristic
count in D_58
x
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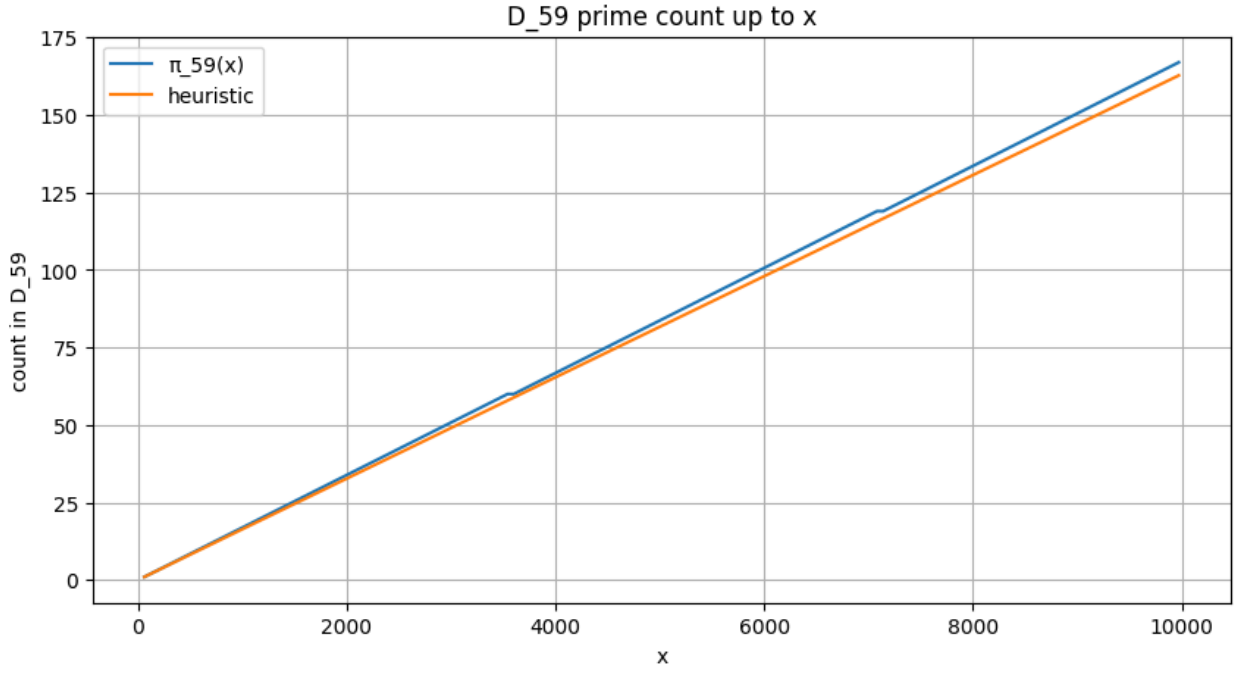
25
50
75
100
125
150
175
0
2000
4000
6000
8000
10000

59 2.72


D_59 prime count up to x
π_59(x)
heuristic
count in D_59
x
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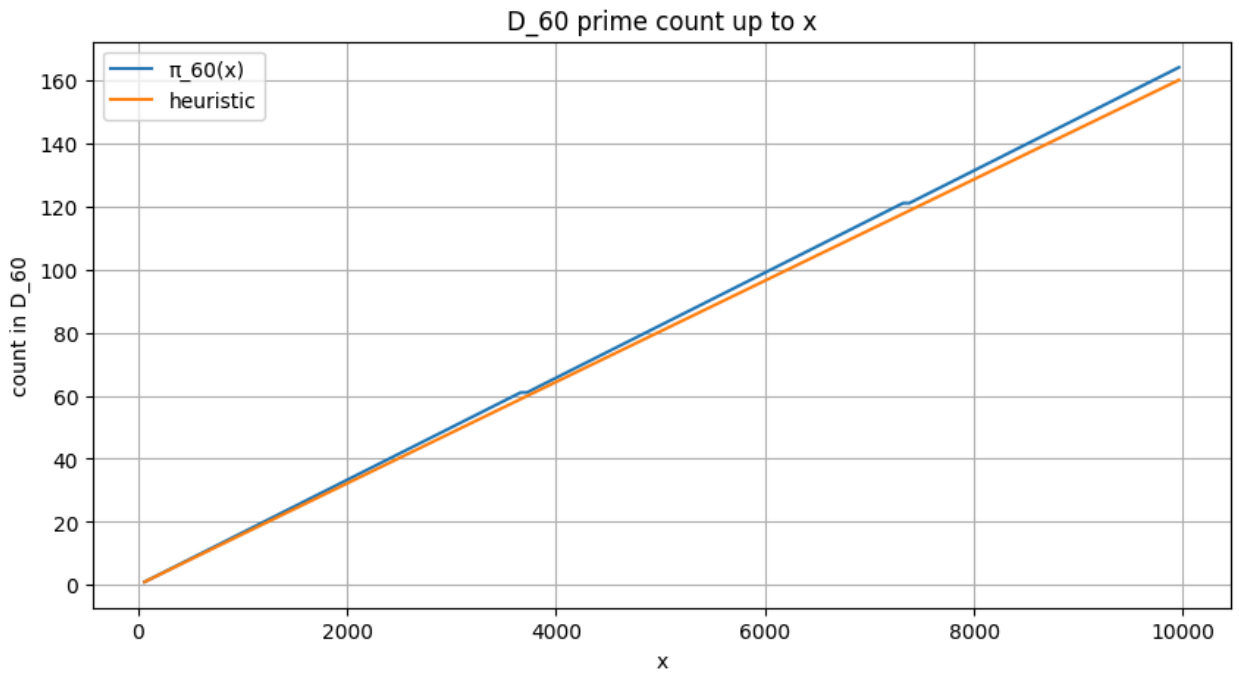
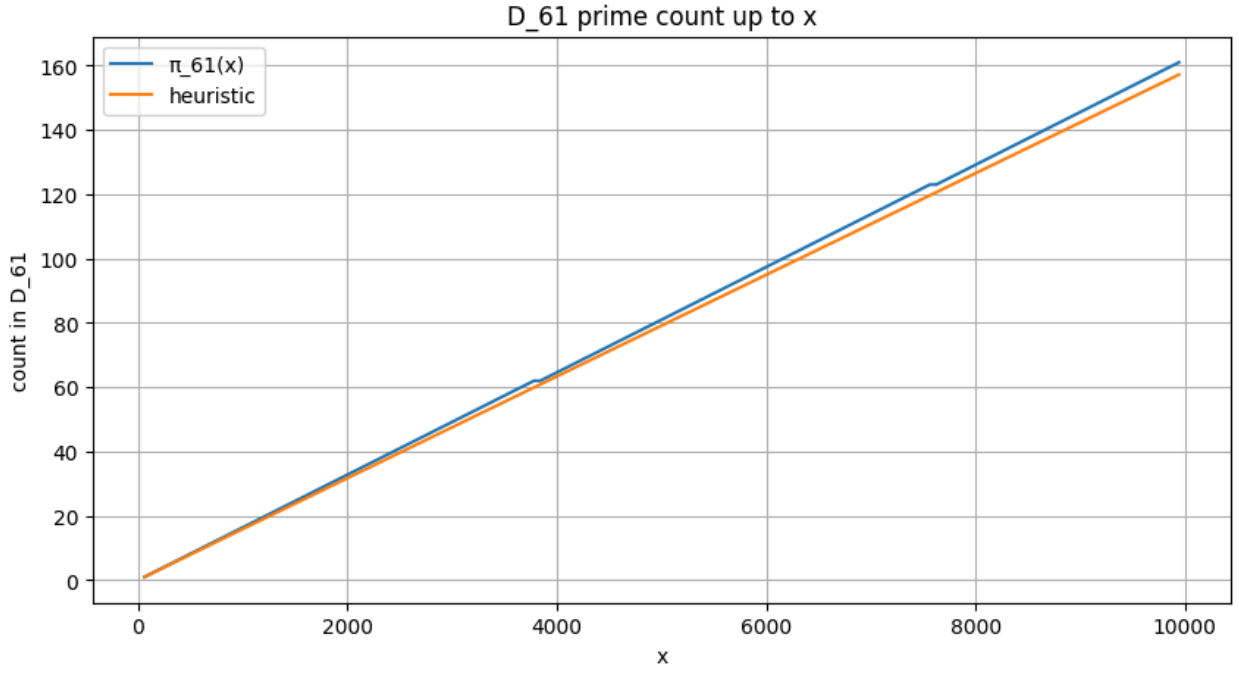
25
50
75
100
125
150
175
0
2000
4000
6000
8000
10000

60 2.69


D_60 prime count up to x
π_60(x)
heuristic
count in D_60
x
0
20
40
60
80
100
120
140
160
0
2000
4000
6000
8000
10000

61 2.66


D_61 prime count up to x
π_61(x)
heuristic
count in D_61
x
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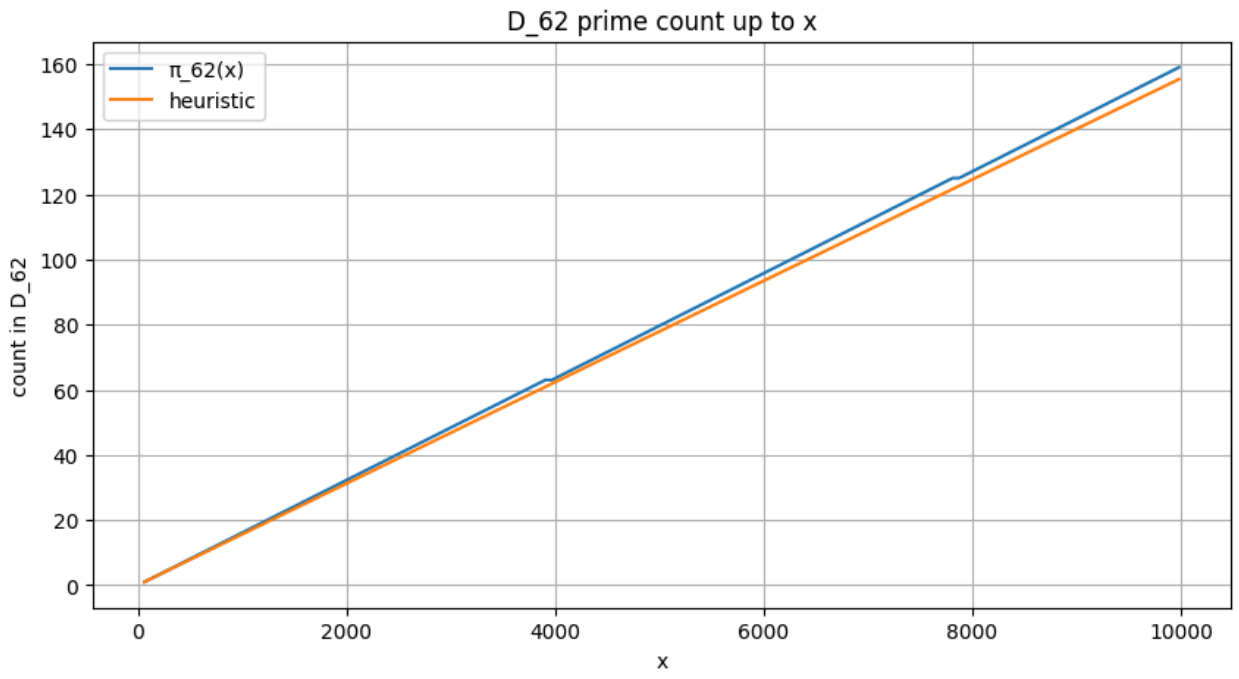
20
40
60
80
100
120
140
160
0
2000
4000
6000
8000
10000

62 2.63


D_62 prime count up to x
π_62(x)
heuristic
count in D_62
x
0
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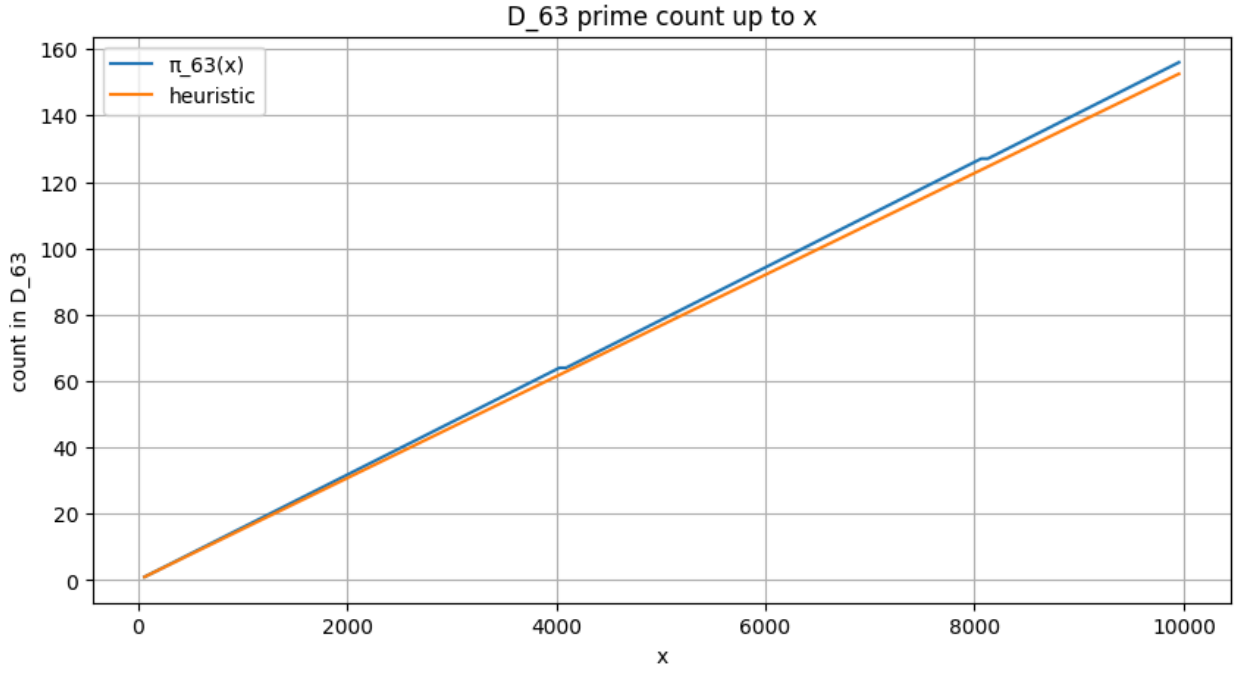
40
60
80
100
120
140
160
0
2000
4000
6000
8000
10000

63 2.60


D_63 prime count up to x
π_63(x)
heuristic
count in D_63
x
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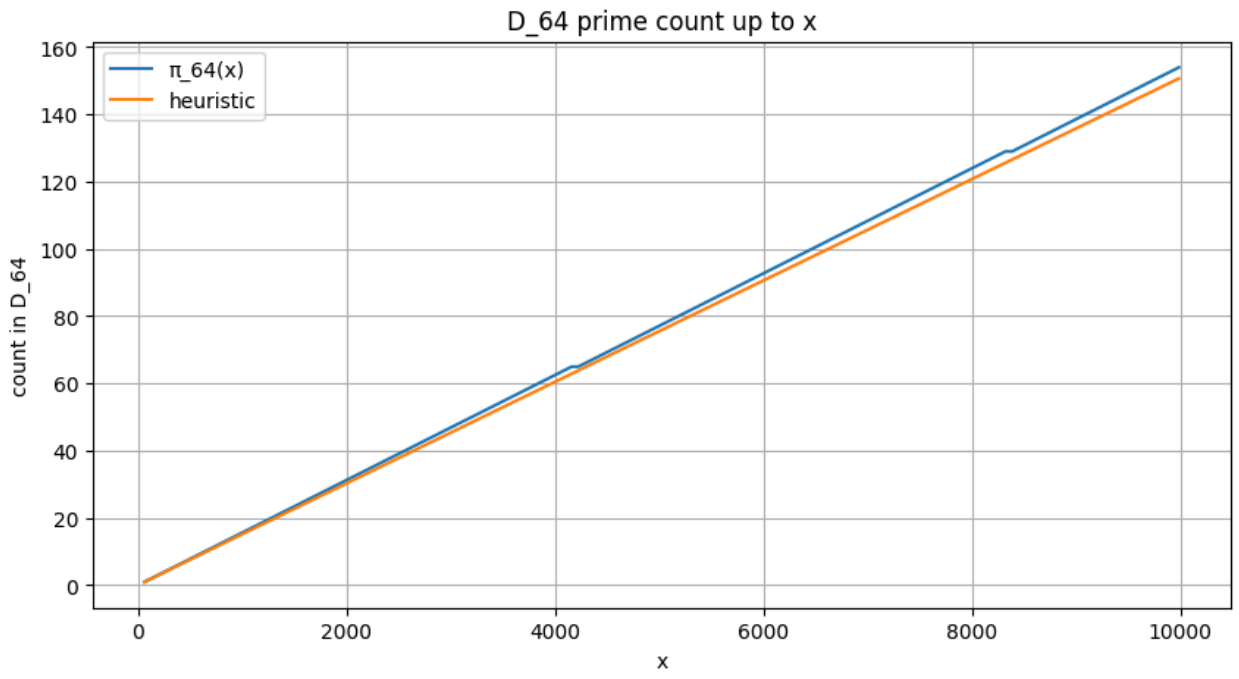
40
60
80
100
120
140
160
0
2000
4000
6000
8000
10000

64 2.58


D_64 prime count up to x
π_64(x)
heuristic
count in D_64
x
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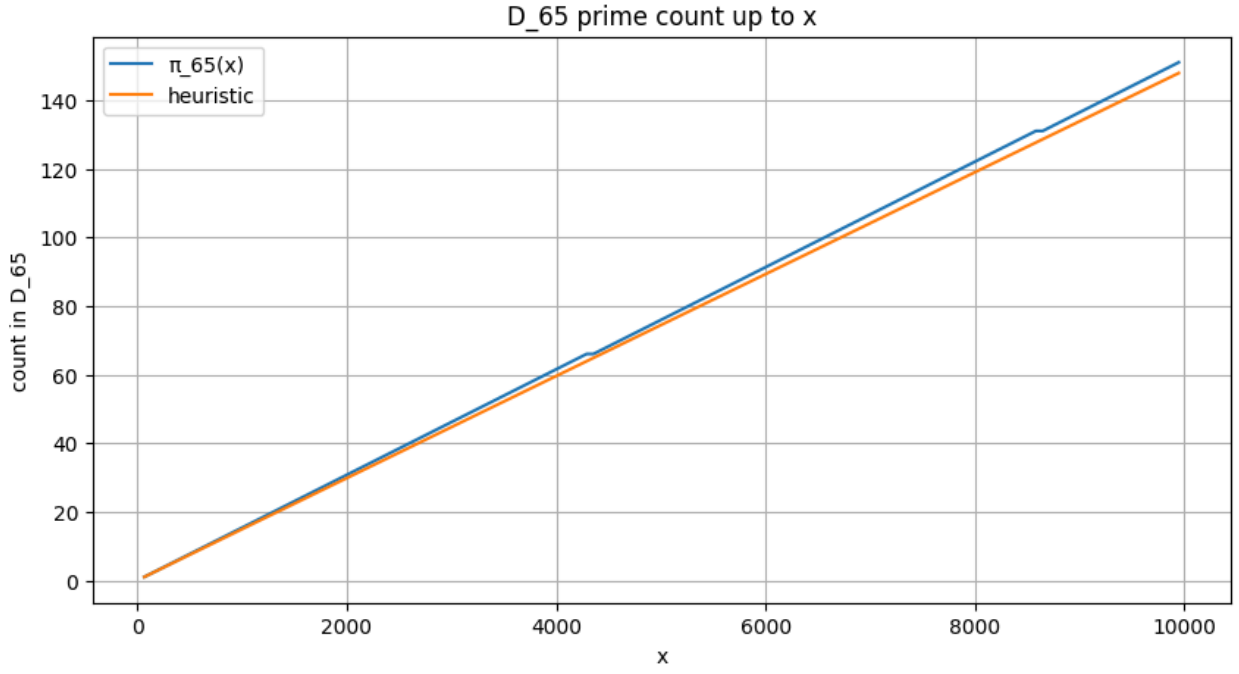
60
80
100
120
140
160
0
2000
4000
6000
8000
10000

65 2.56


D_65 prime count up to x
π_65(x)
heuristic
count in D_65
x
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60
80
100
120
140
0
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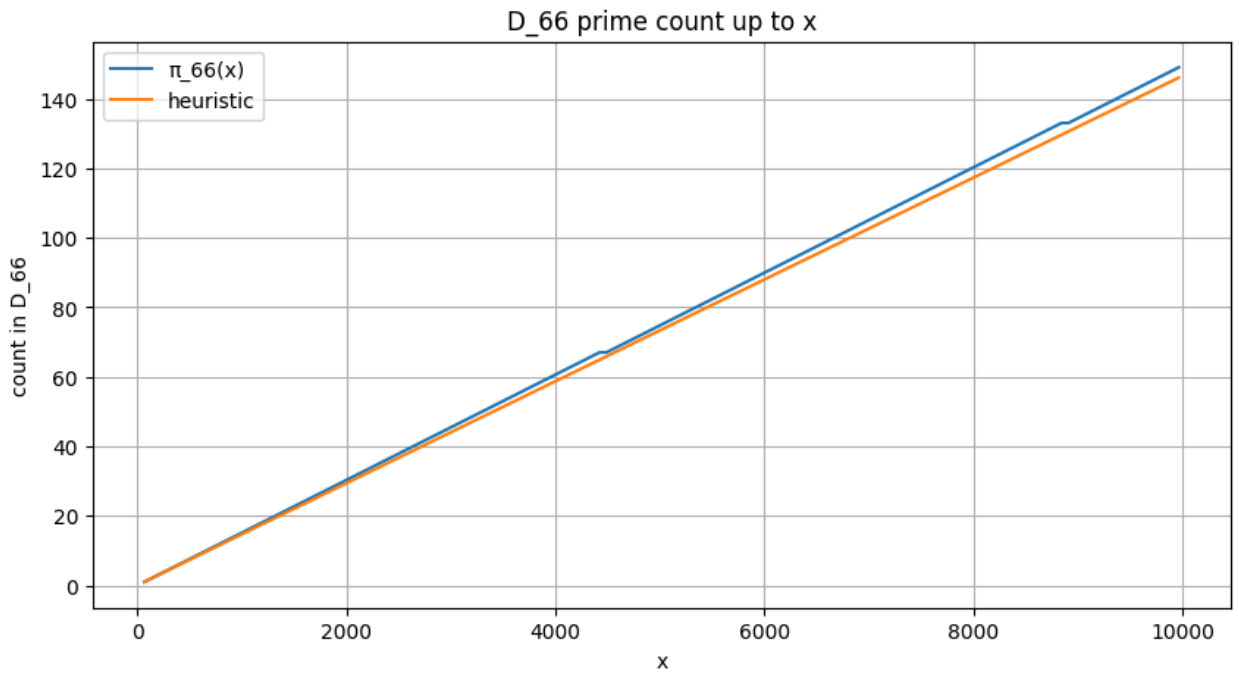
4000
6000
8000
10000

66 2.54


D_66 prime count up to x
π_66(x)
heuristic
count in D_66
x
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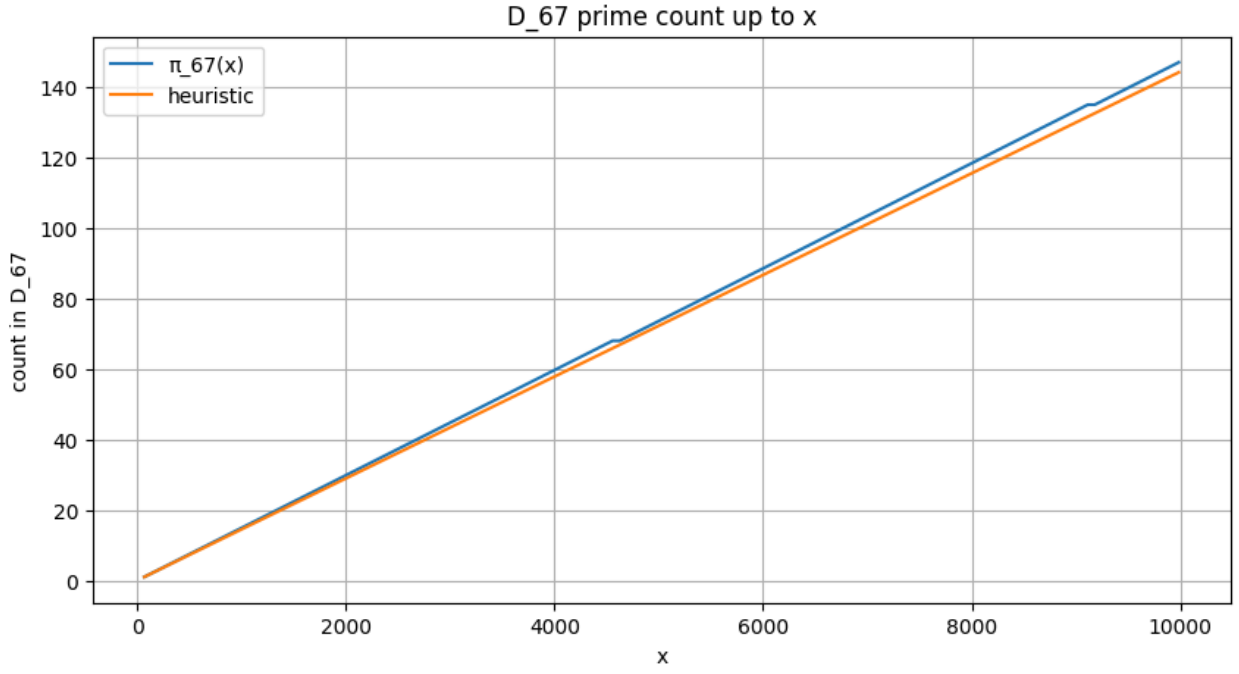
60
80
100
120
140
0
2000
4000
6000
8000
10000

67 2.52


D_67 prime count up to x
π_67(x)
heuristic
count in D_67
x
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60
80
100
120
140
0
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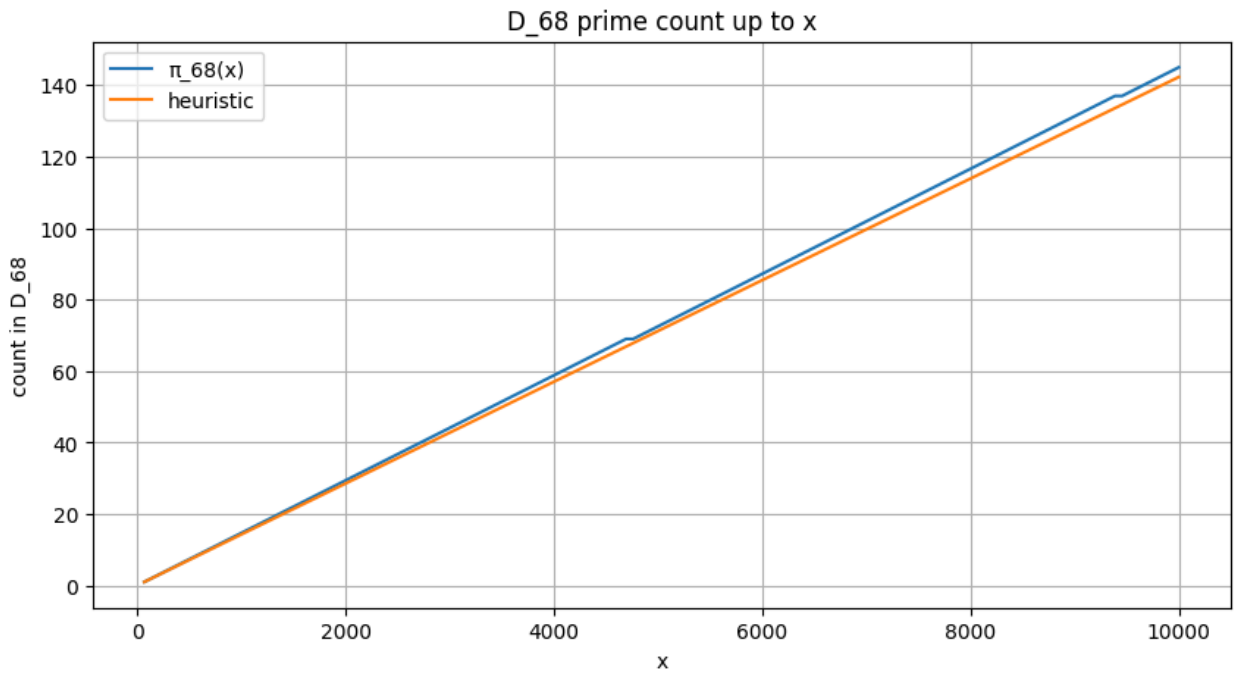
4000
6000
8000
10000

68 2.51


D_68 prime count up to x
π_68(x)
heuristic
count in D_68
x
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60
80
100
120
140
0
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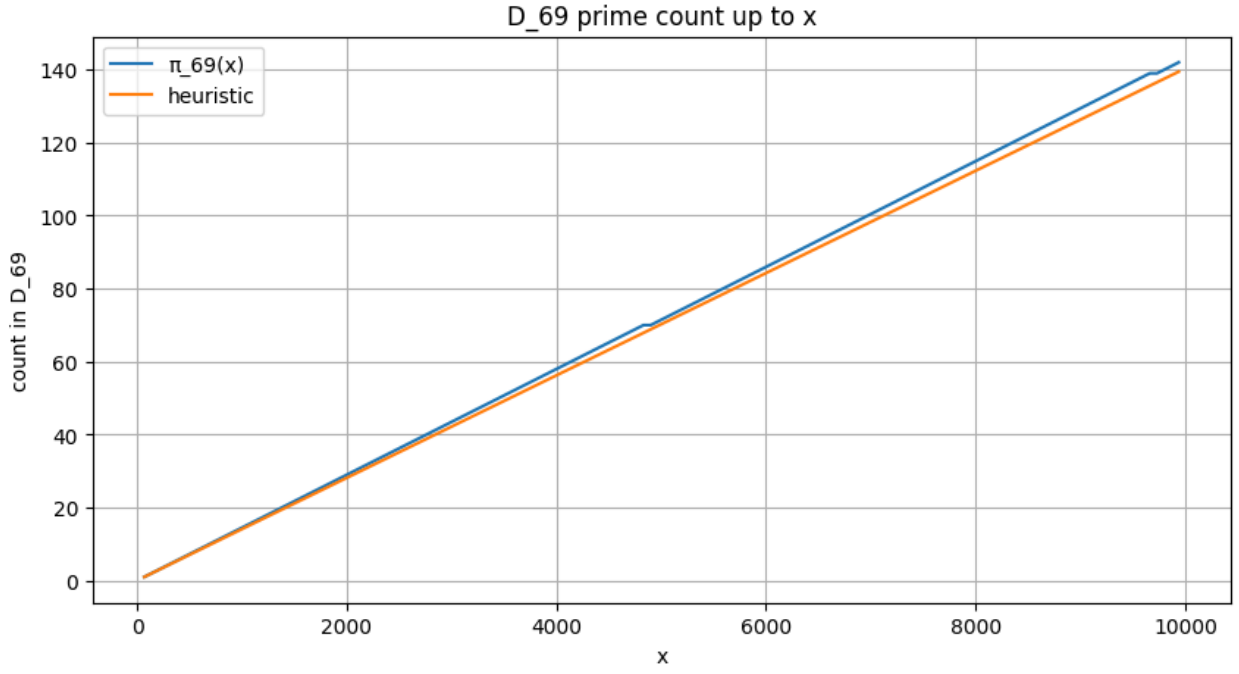
4000
6000
8000
10000

69 2.50


D_69 prime count up to x
π_69(x)
heuristic
count in D_69
x
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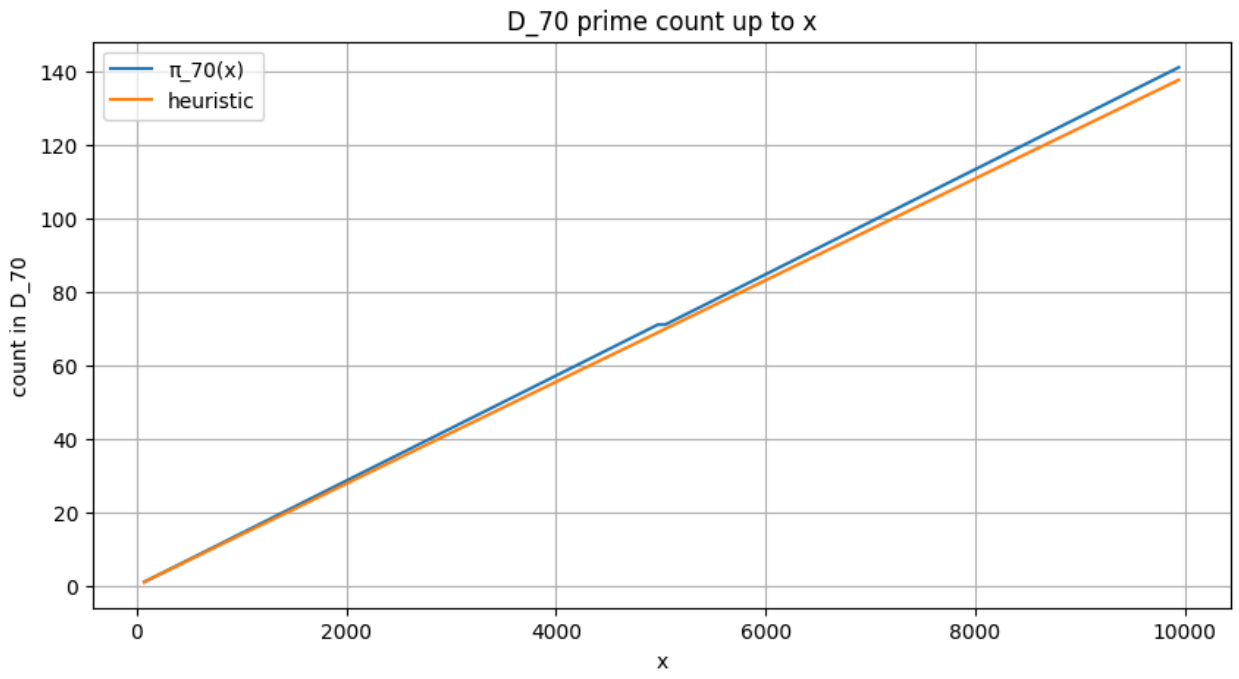
60
80
100
120
140
0
2000
4000
6000
8000
10000

70 2.49


D_70 prime count up to x
π_70(x)
heuristic
count in D_70
x
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60
80
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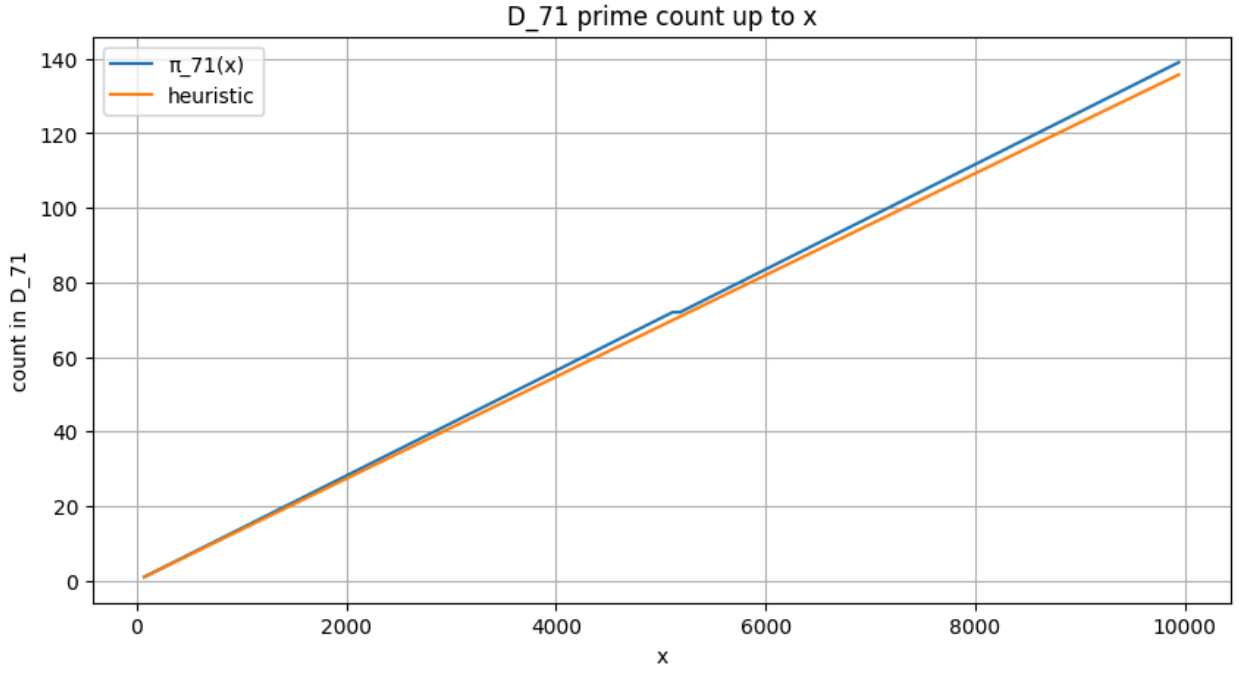
120
140
0
2000
4000
6000
8000
10000

71 2.46


D_71 prime count up to x
π_71(x)
heuristic
count in D_71
x
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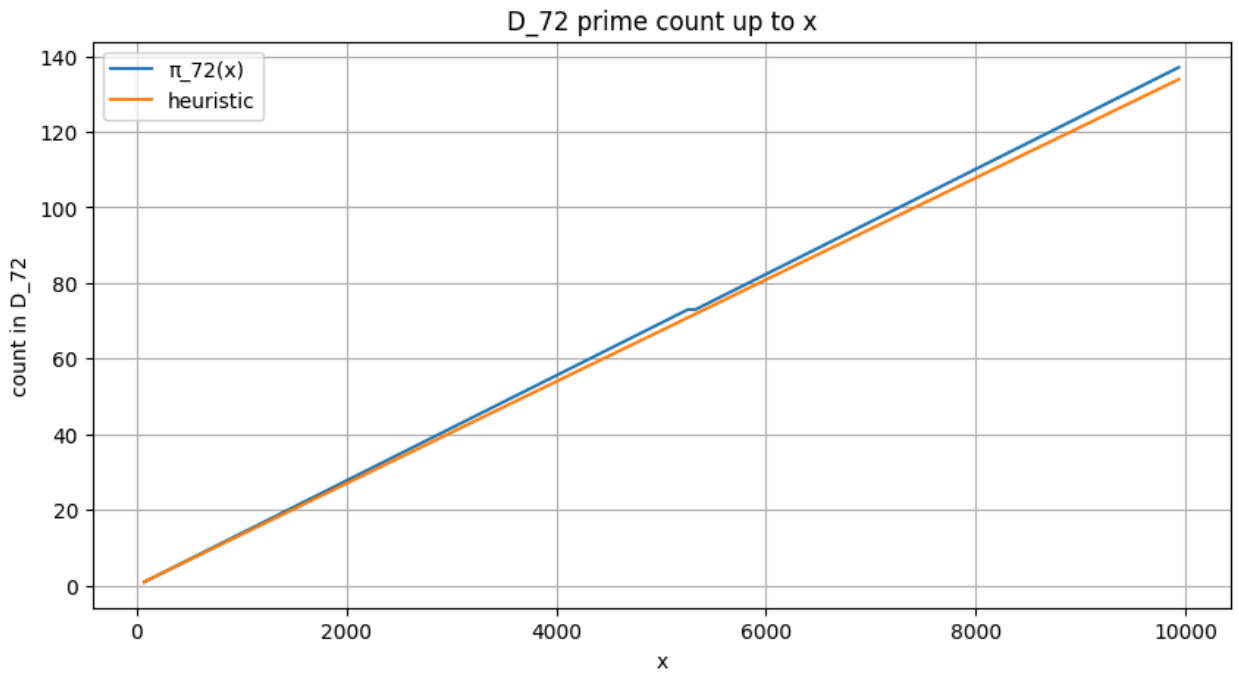
60
80
100
120
140
0
2000
4000
6000
8000
10000

72 2.43


D_72 prime count up to x
π_72(x)
heuristic
count in D_72
x
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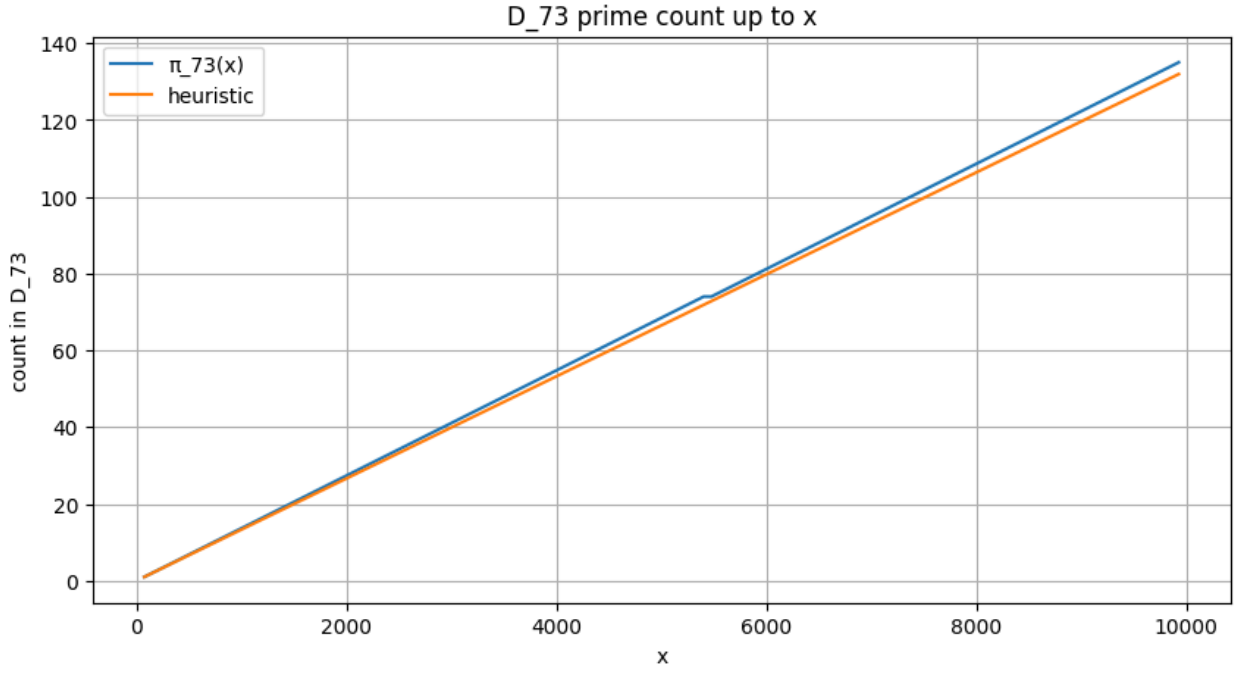
20
40
60
80
100
120
140
0
2000
4000
6000
8000
10000

73 2.40


D_73 prime count up to x
π_73(x)
heuristic
count in D_73
x
0
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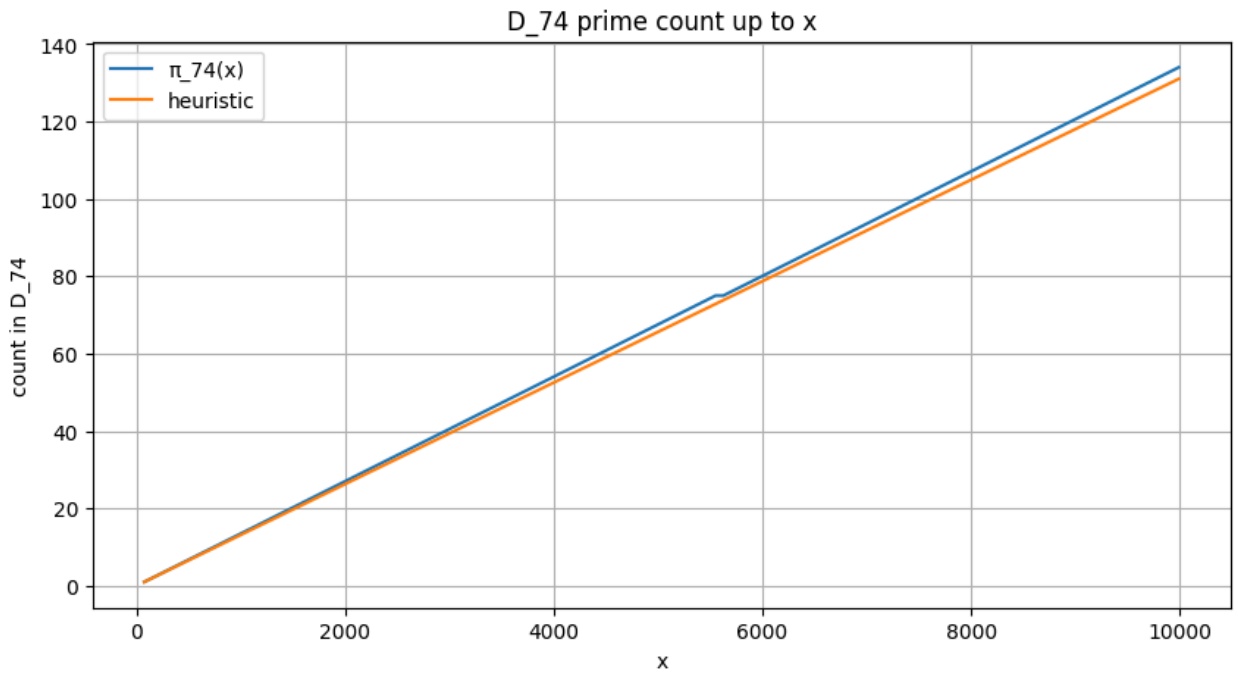
40
60
80
100
120
140
0
2000
4000
6000
8000
10000

74 2.38


D_74 prime count up to x
π_74(x)
heuristic
count in D_74
x
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20
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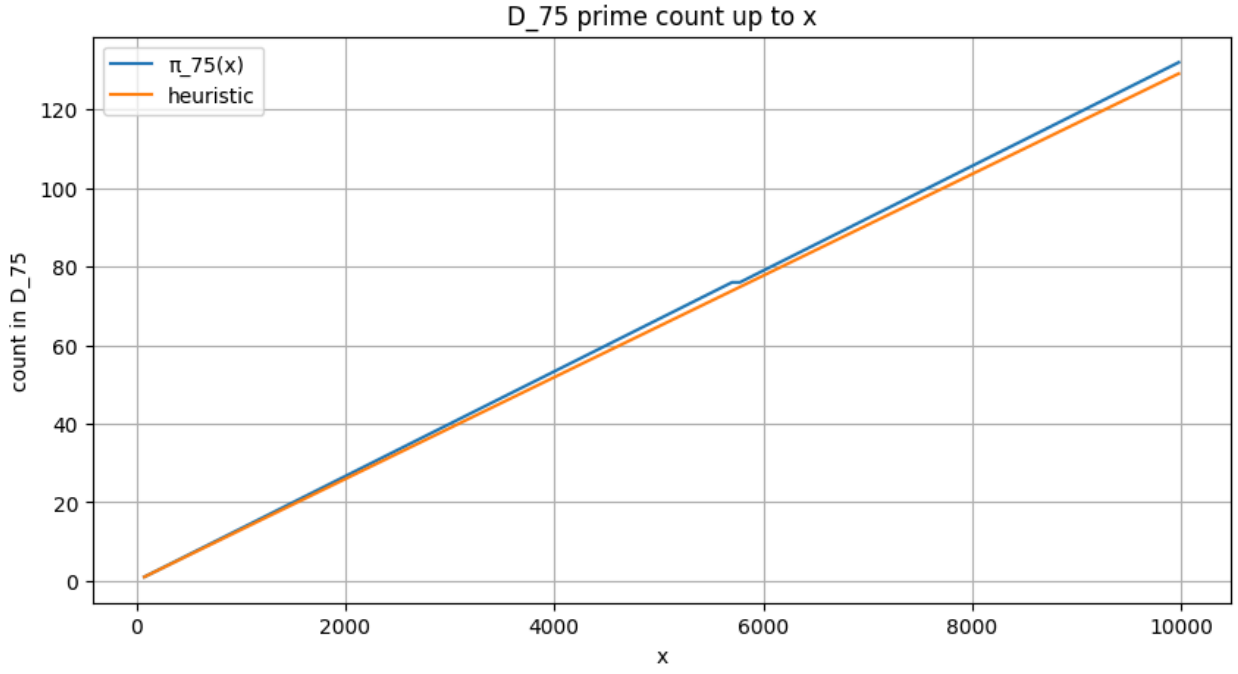
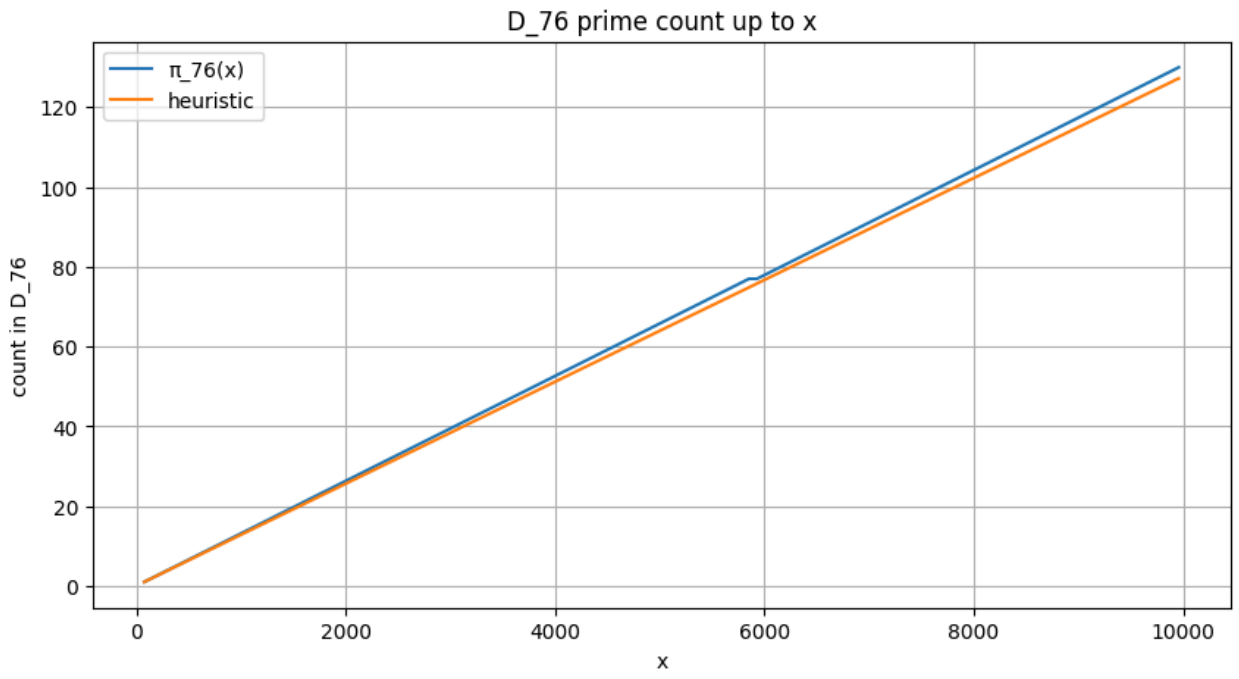
60
80
100
120
140
0
2000
4000
6000
8000
10000

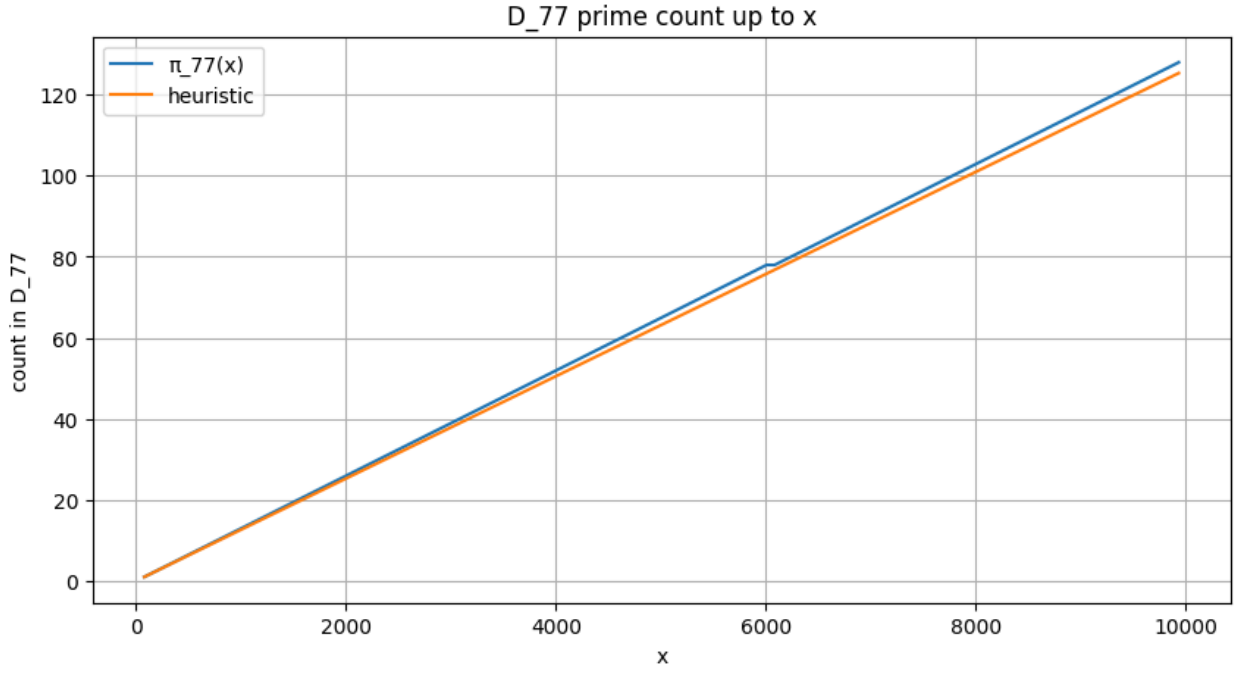
75 2.35


D_75 prime count up to x
π_75(x)
heuristic
count in D_75
x
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

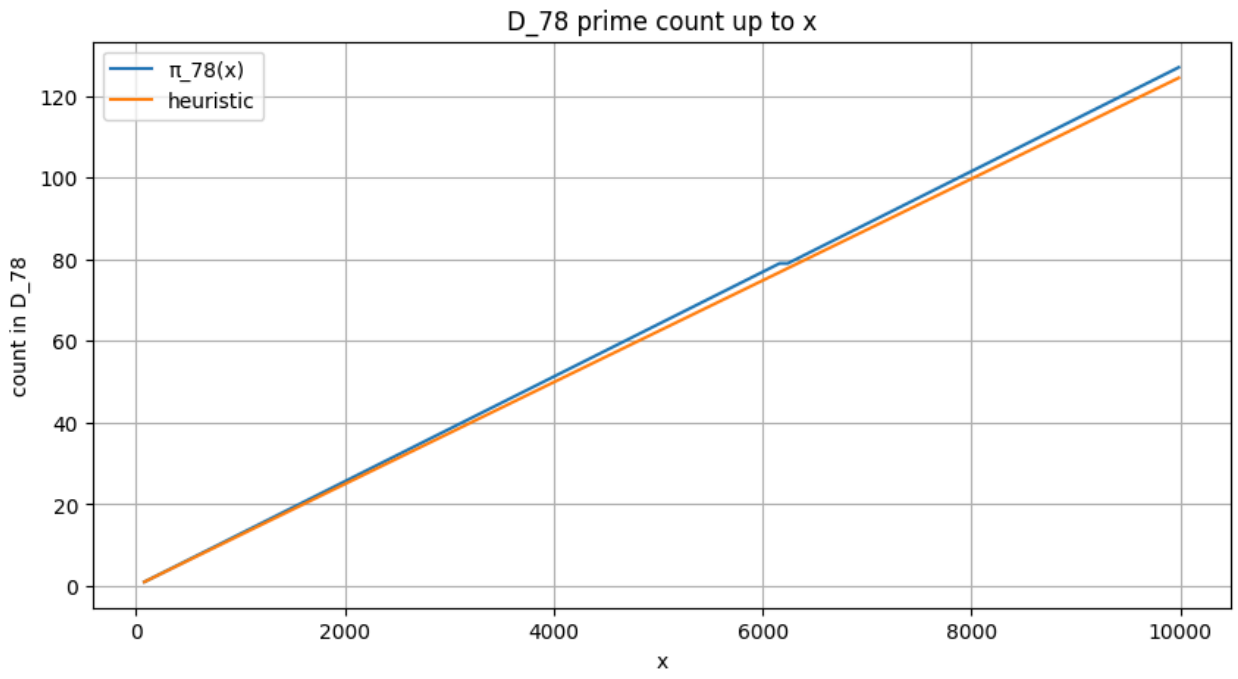
76 2.33


D_76 prime count up to x
π_76(x)
heuristic
count in D_76
x
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

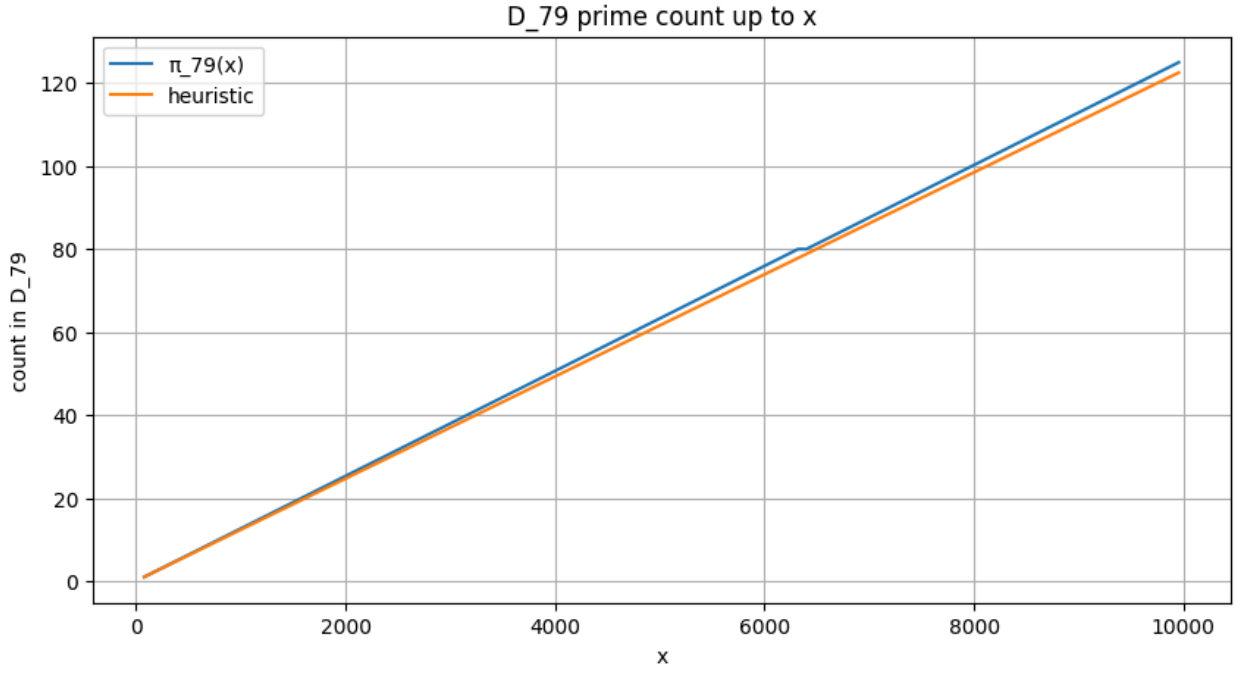
77 2.31


D_77 prime count up to x
π_77(x)
heuristic
count in D_77
x
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

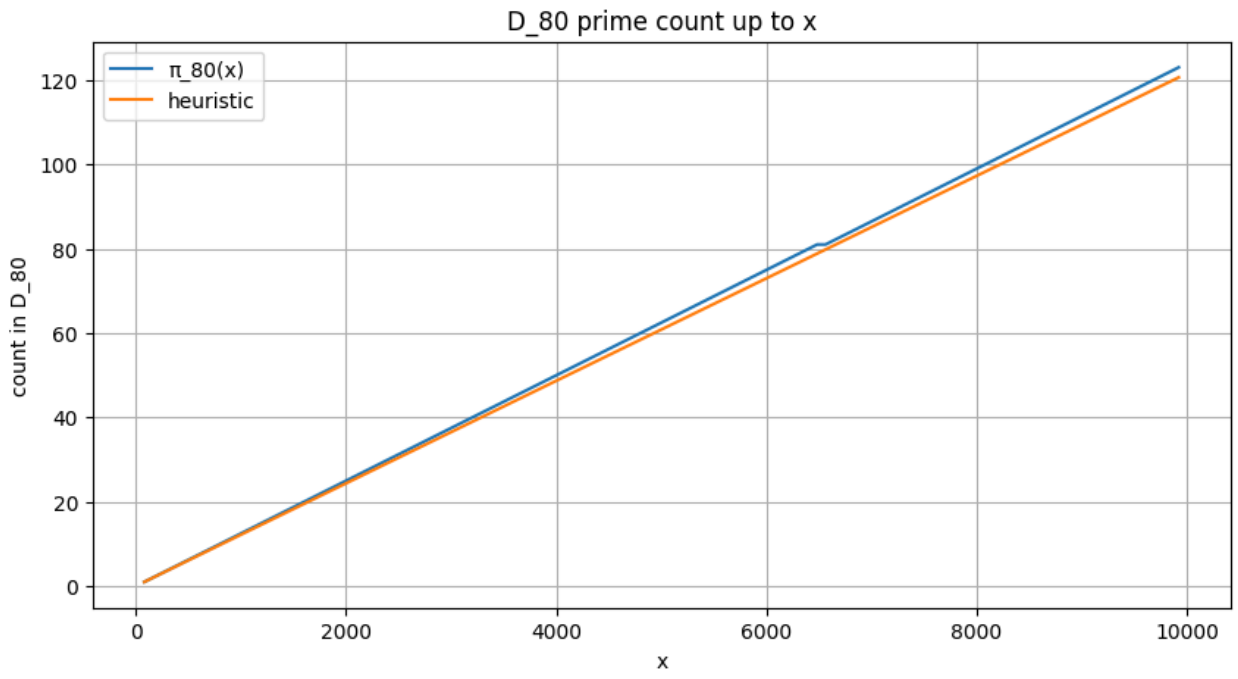
78 2.29


D_78 prime count up to x
π_78(x)
heuristic
count in D_78
x
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

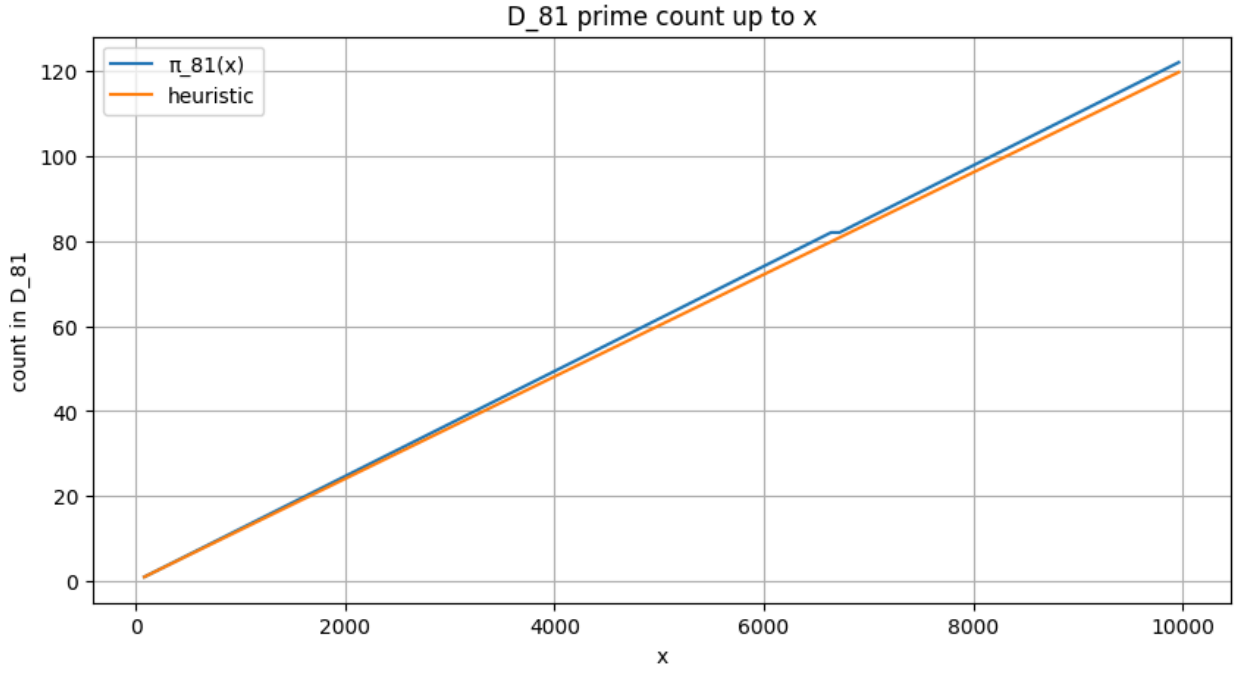
79 2.27


D_79 prime count up to x
π_79(x)
heuristic
count in D_79
x
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

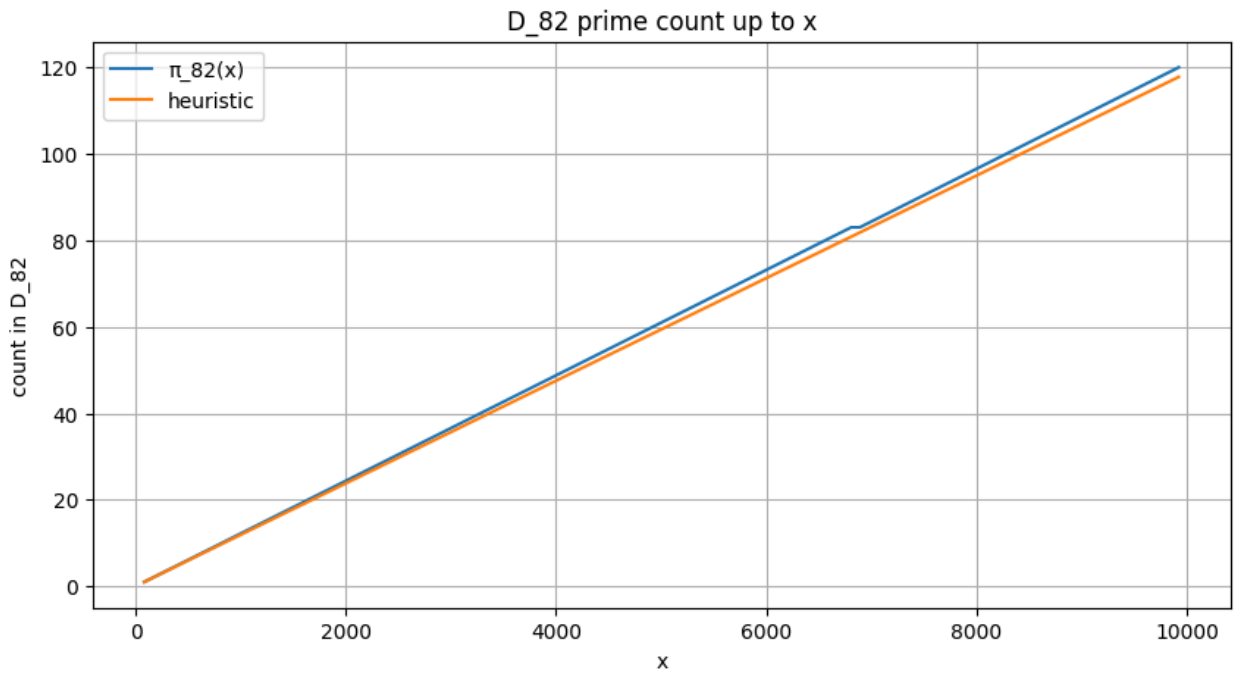
80 2.25


D_80 prime count up to x
π_80(x)
heuristic
count in D_80
x
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

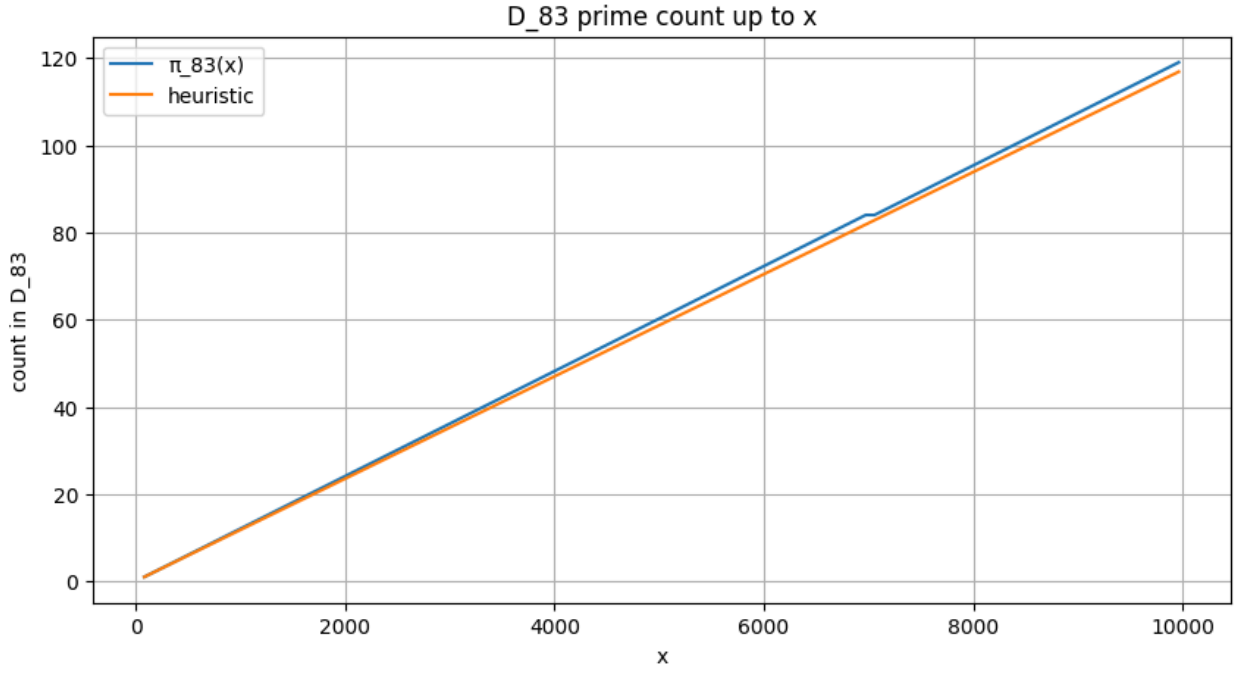
81 2.24


D_81 prime count up to x
π_81(x)
heuristic
count in D_81
x
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

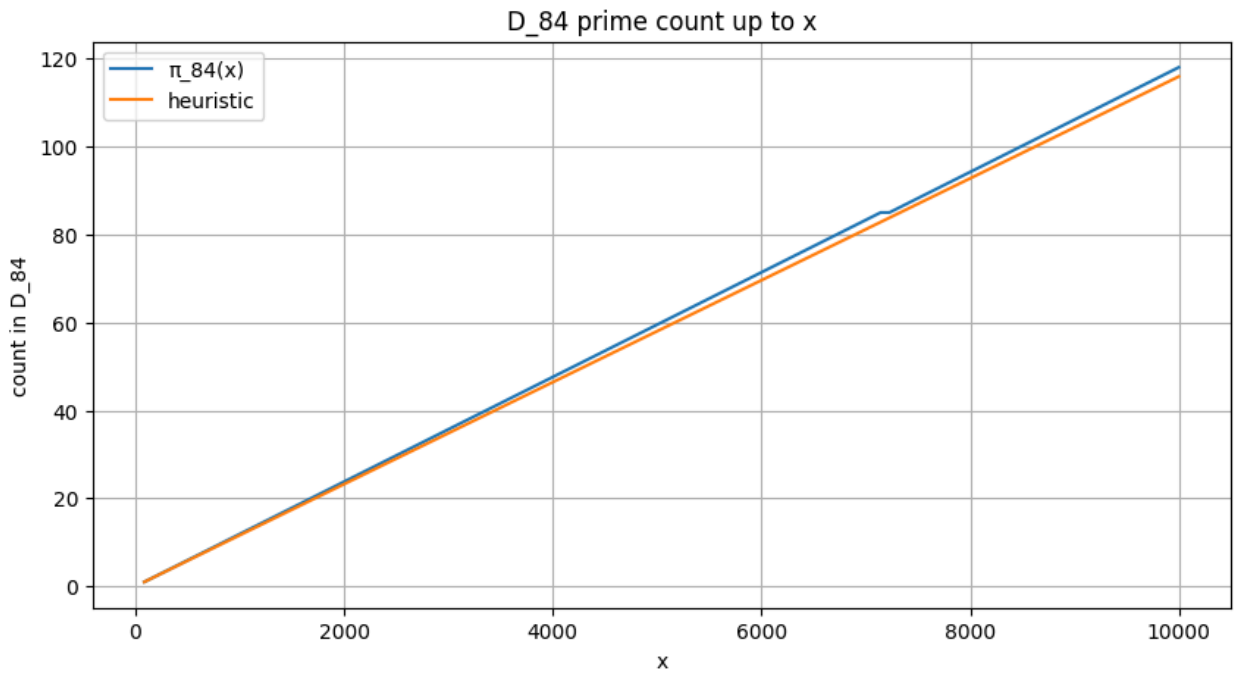
82 2.22


D_82 prime count up to x
π_82(x)
heuristic
count in D_82
x
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

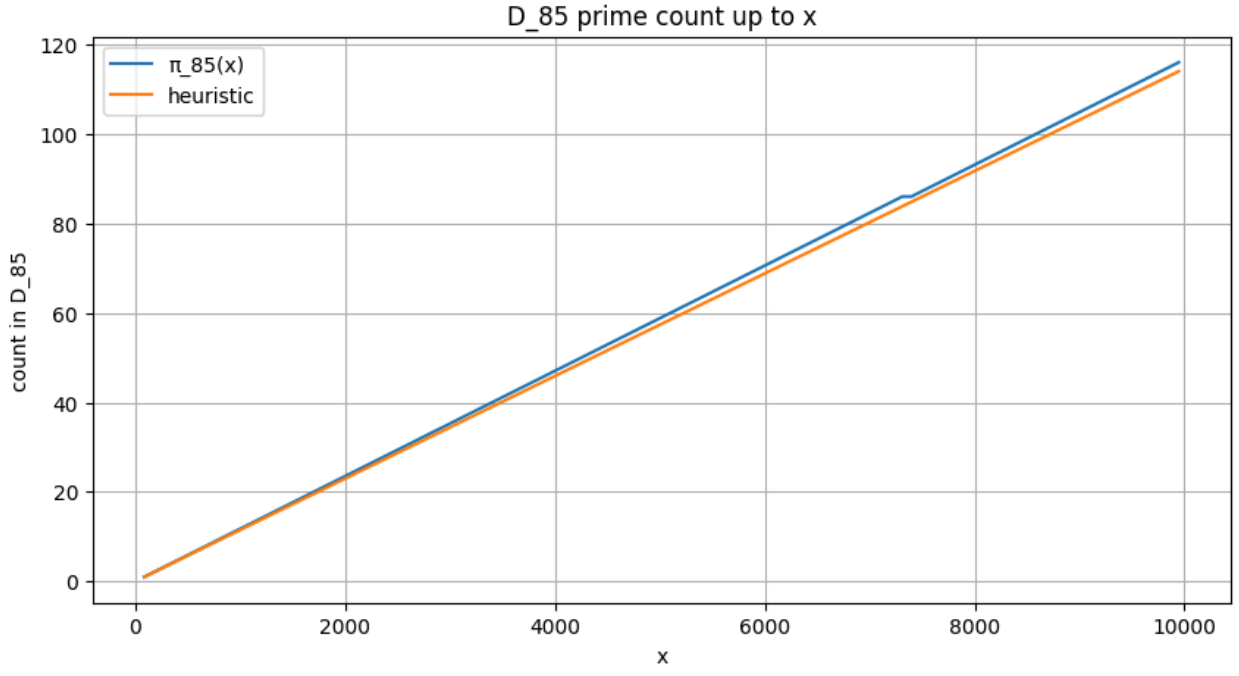
83 2.21


D_83 prime count up to x
π_83(x)
heuristic
count in D_83
x
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

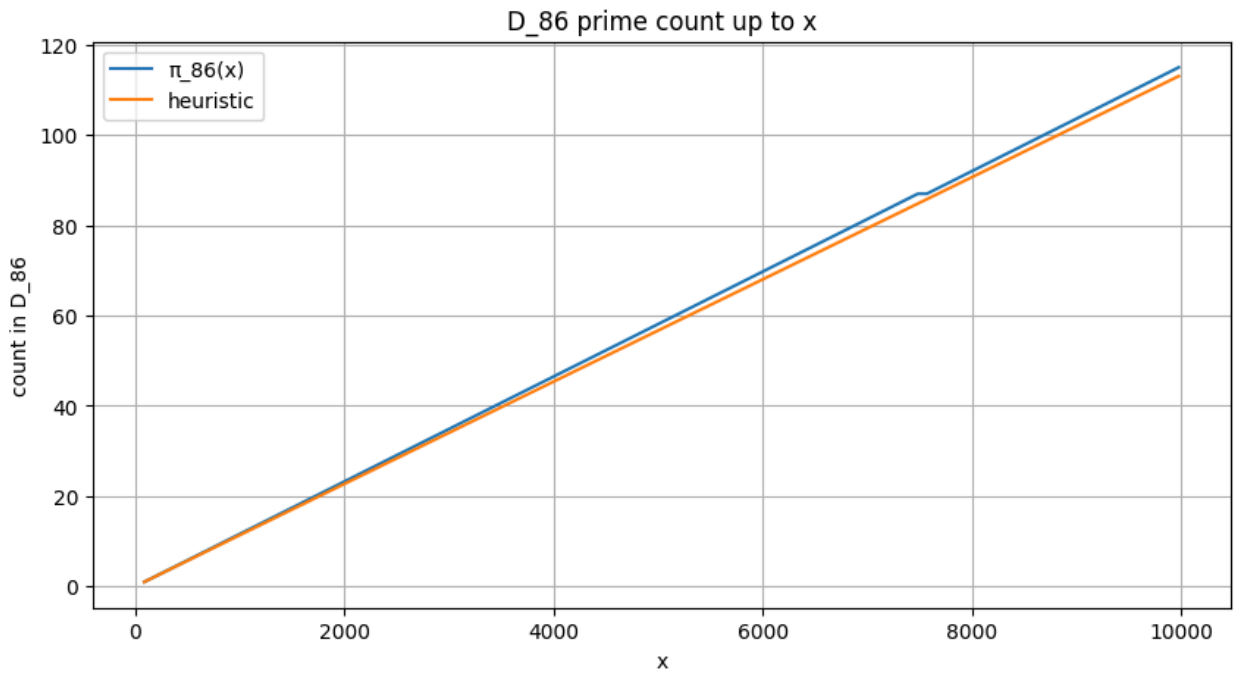
84 2.19


D_84 prime count up to x
π_84(x)
heuristic
count in D_84
x
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

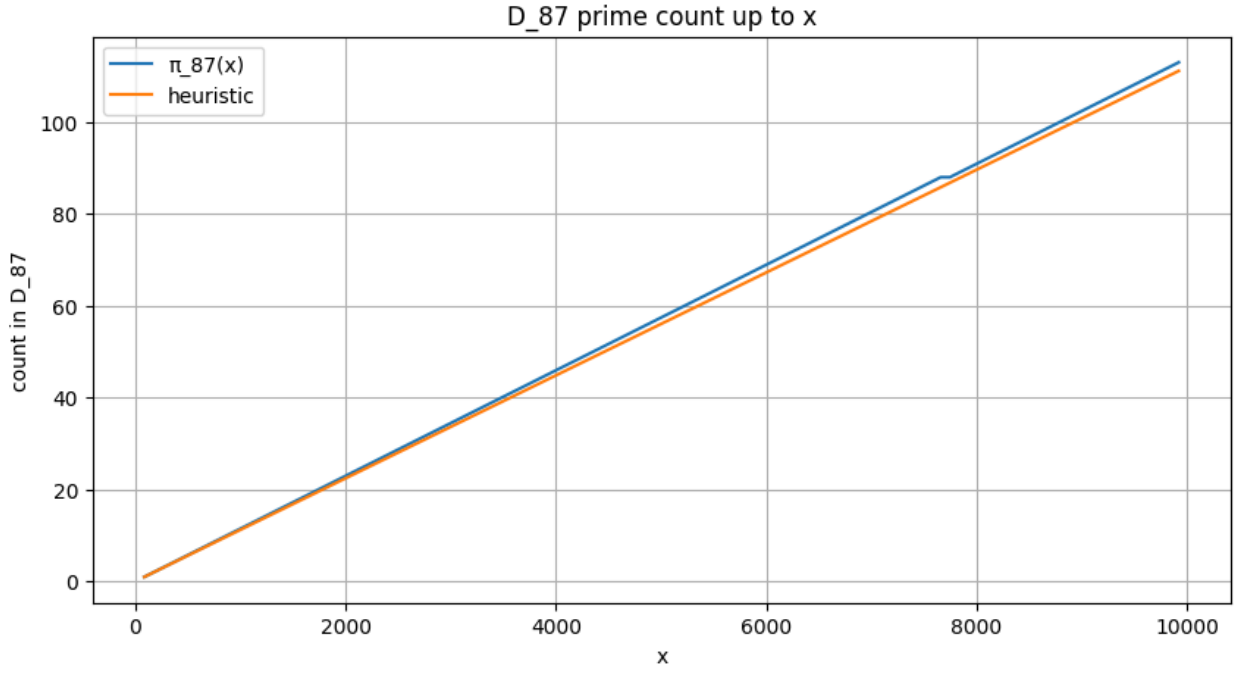
85 2.18


D_85 prime count up to x
π_85(x)
heuristic
count in D_85
x
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

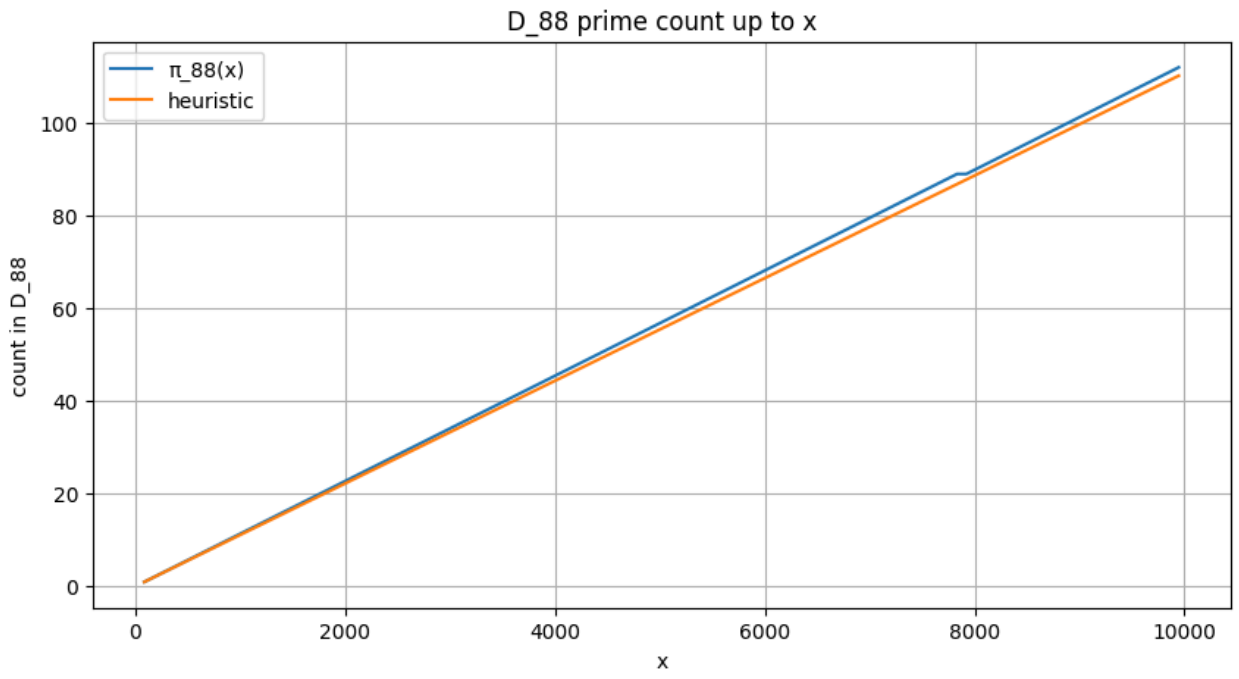
86 2.17


D_86 prime count up to x
π_86(x)
heuristic
count in D_86
x
0
20
40
60
80
100
120
0
2000
4000
6000
8000
10000

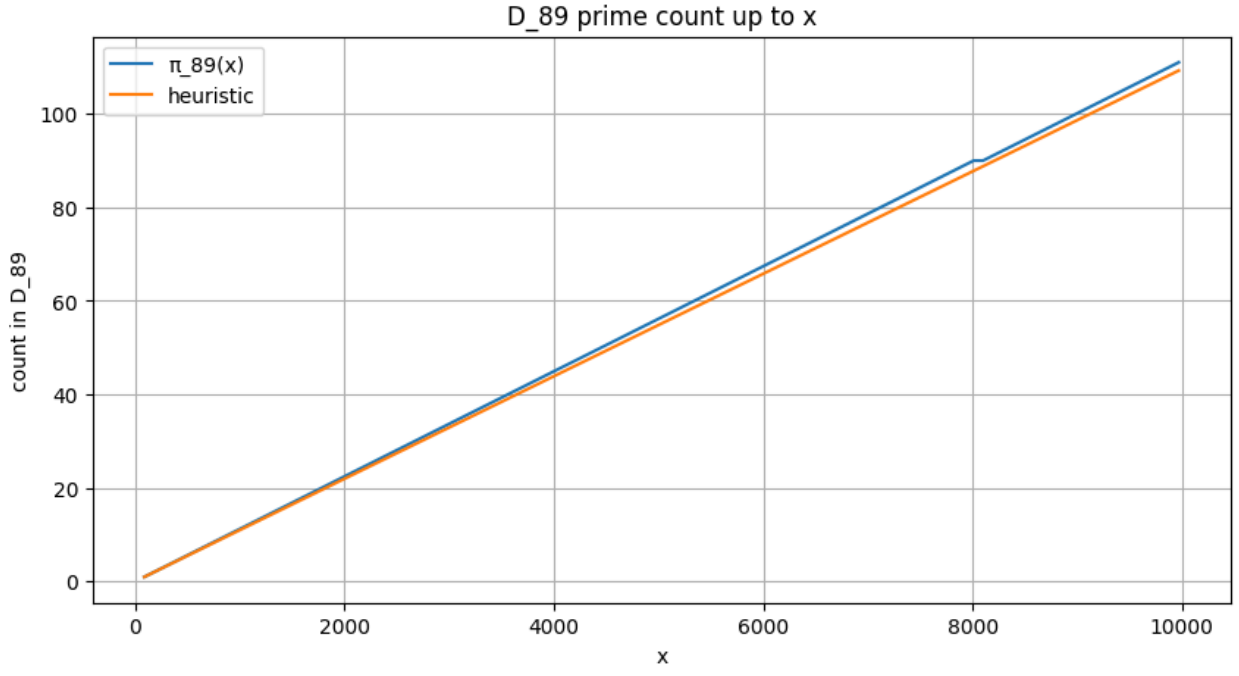
87 2.16


D_87 prime count up to x
π_87(x)
heuristic
count in D_87
x
0
20
40
60
80
100
0
2000
4000
6000
8000
10000

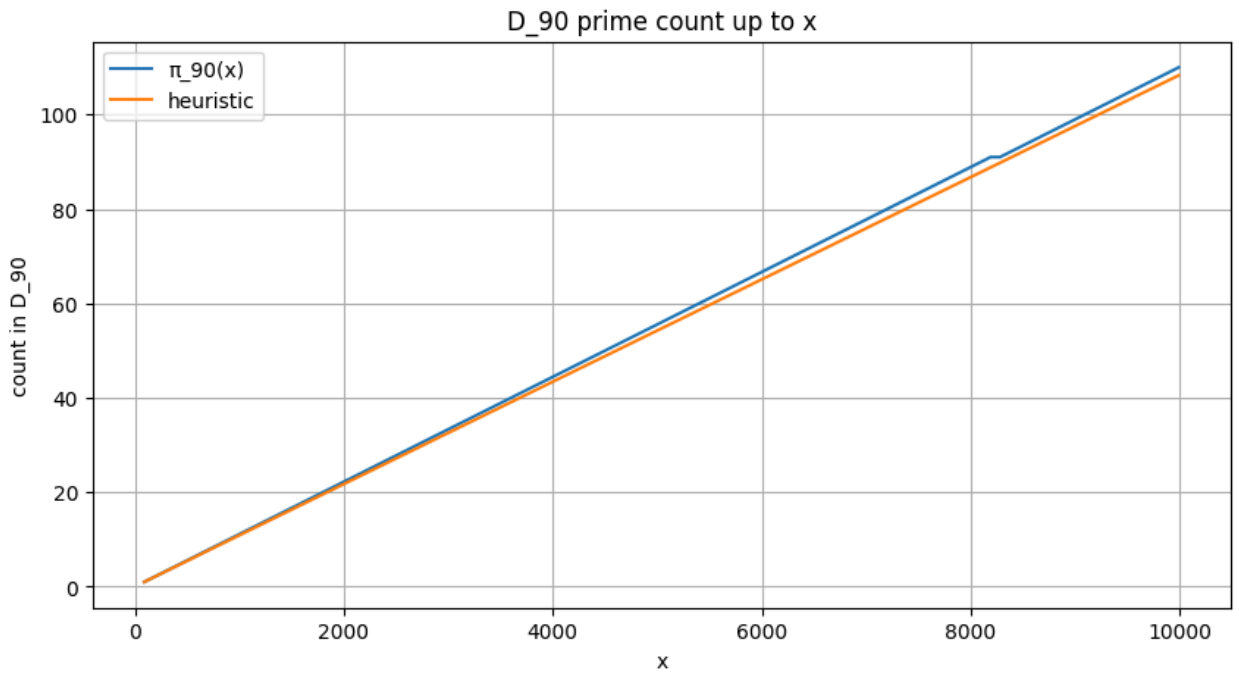
88 2.15


D_88 prime count up to x
π_88(x)
heuristic
count in D_88
x
0
20
40
60
80
100
0
2000
4000
6000
8000
10000

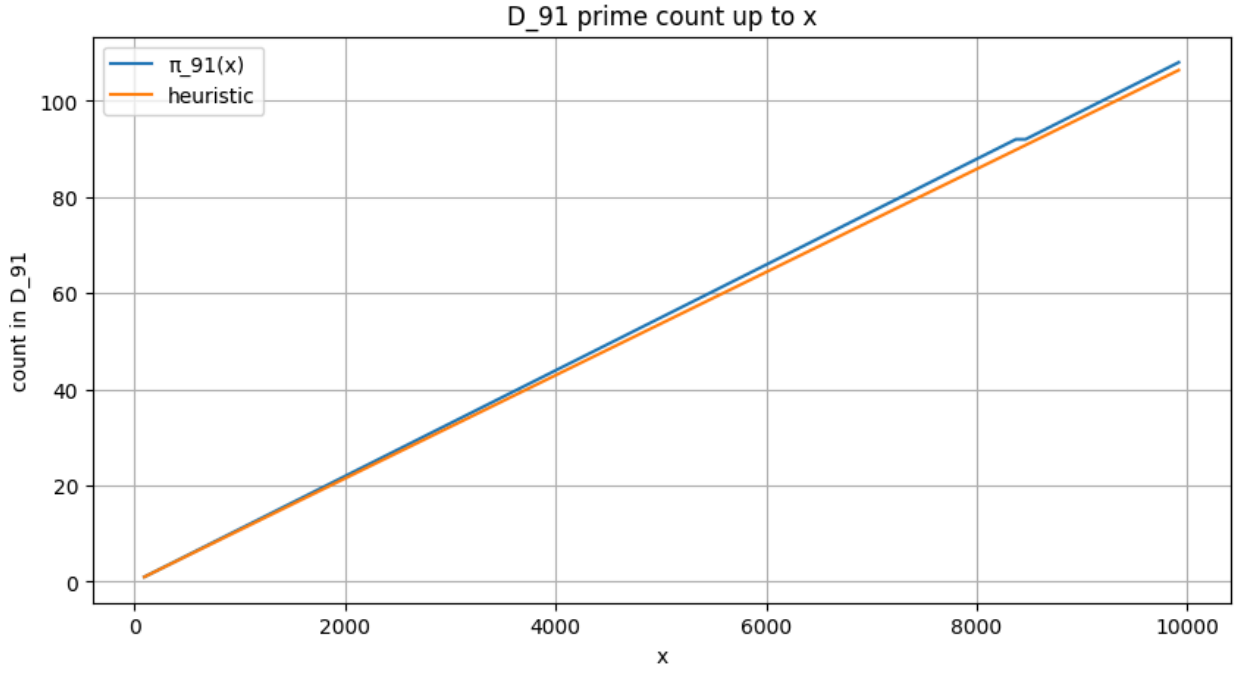
89 2.14


D_89 prime count up to x
π_89(x)
heuristic
count in D_89
x
0
20
40
60
80
100
0
2000
4000
6000
8000
10000

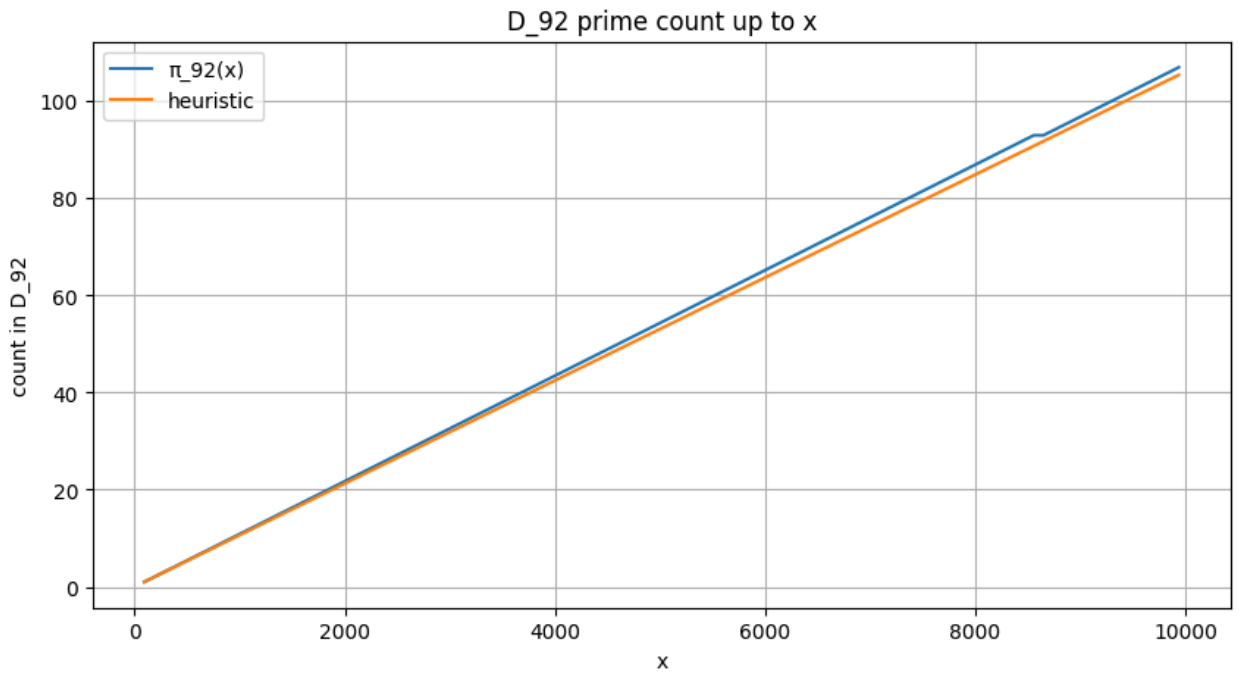
90 2.13


D_90 prime count up to x
π_90(x)
heuristic
count in D_90
x
0
20
40
60
80
100
0
2000
4000
6000
8000
10000

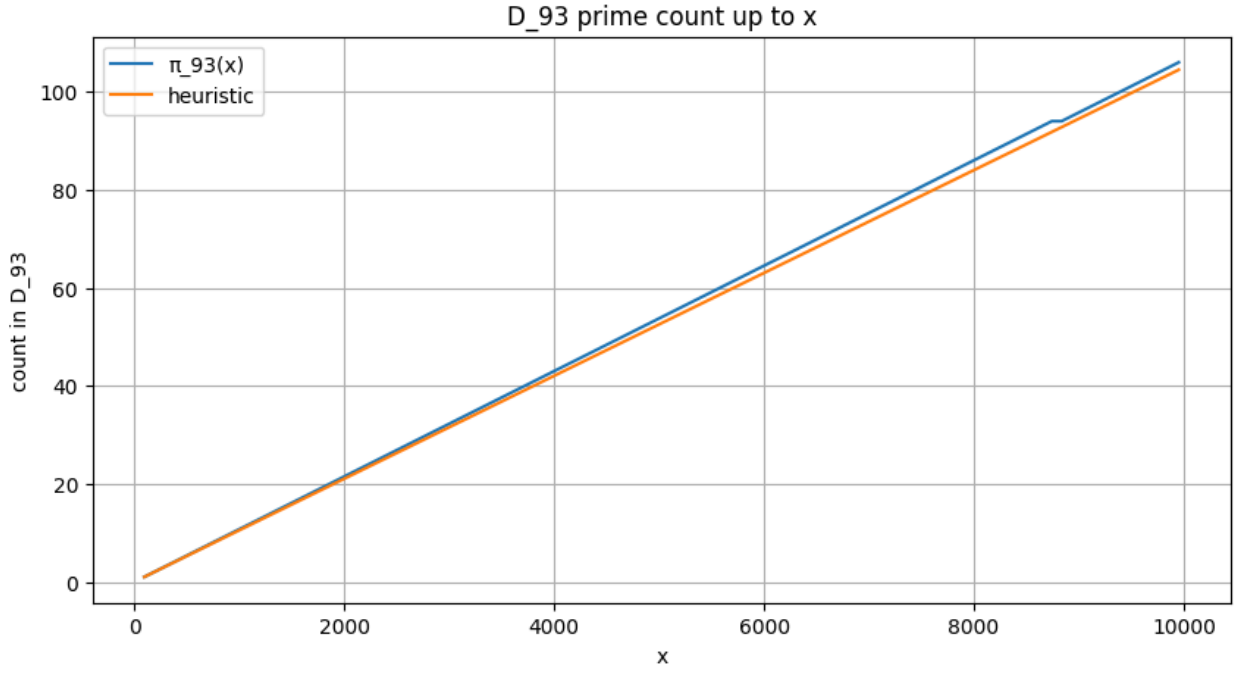
91 2.12


D_91 prime count up to x
π_91(x)
heuristic
count in D_91
x
0
20
40
60
80
100
0
2000
4000
6000
8000
10000

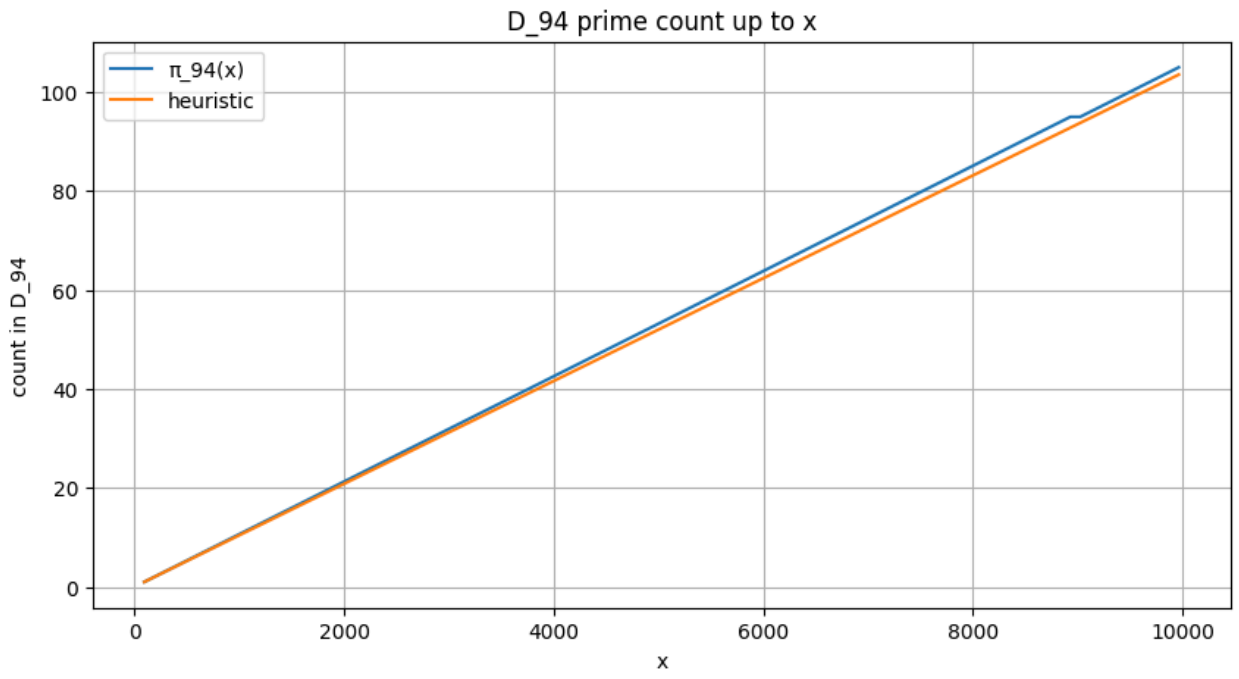
92 2.12


D_92 prime count up to x
π_92(x)
heuristic
count in D_92
x
0
20
40
60
80
100
0
2000
4000
6000
8000
10000

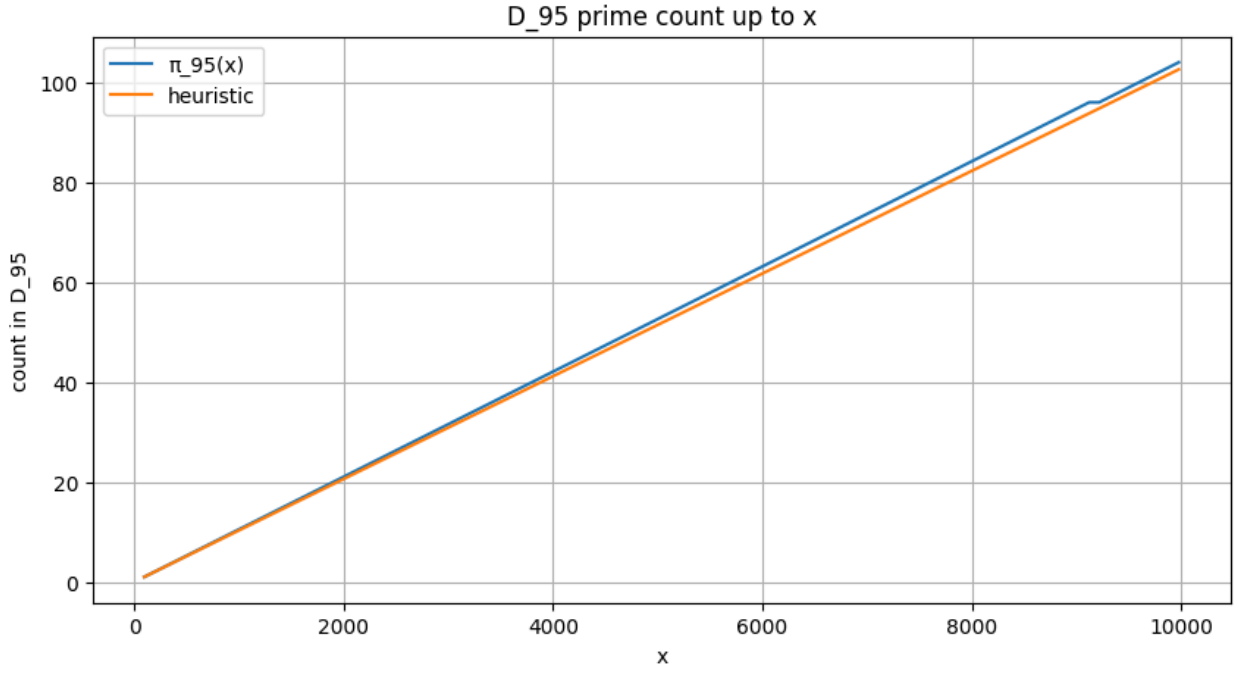
93 2.11


D_93 prime count up to x
π_93(x)
heuristic
count in D_93
x
0
20
40
60
80
100
0
2000
4000
6000
8000
10000

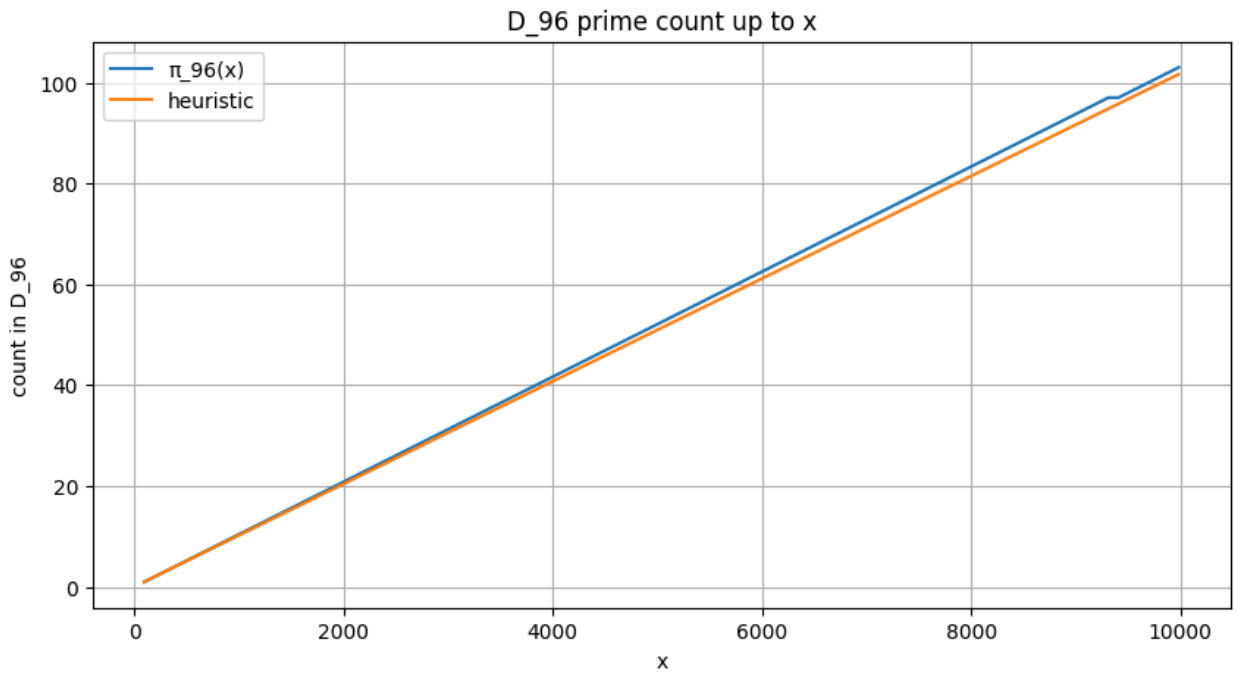
94 2.10


D_94 prime count up to x
π_94(x)
heuristic
count in D_94
x
0
20
40
60
80
100
0
2000
4000
6000
8000
10000

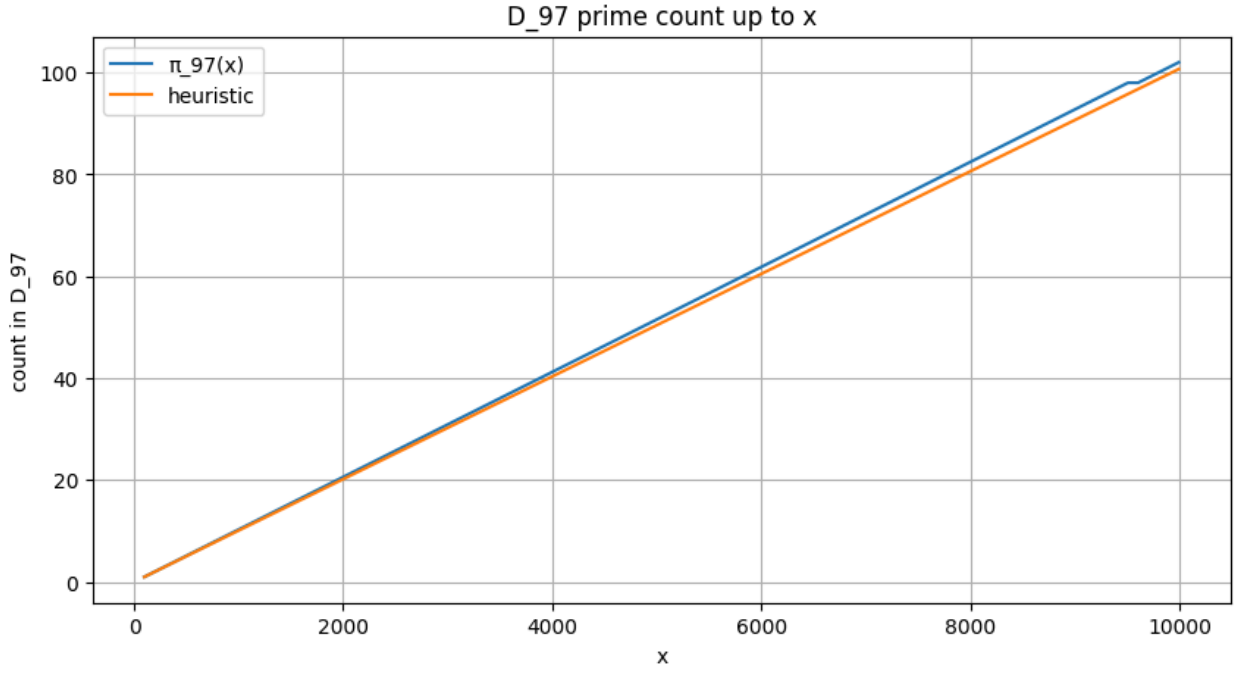
95 2.10


D_95 prime count up to x
π_95(x)
heuristic
count in D_95
x
0
20
40
60
80
100
0
2000
4000
6000
8000
10000

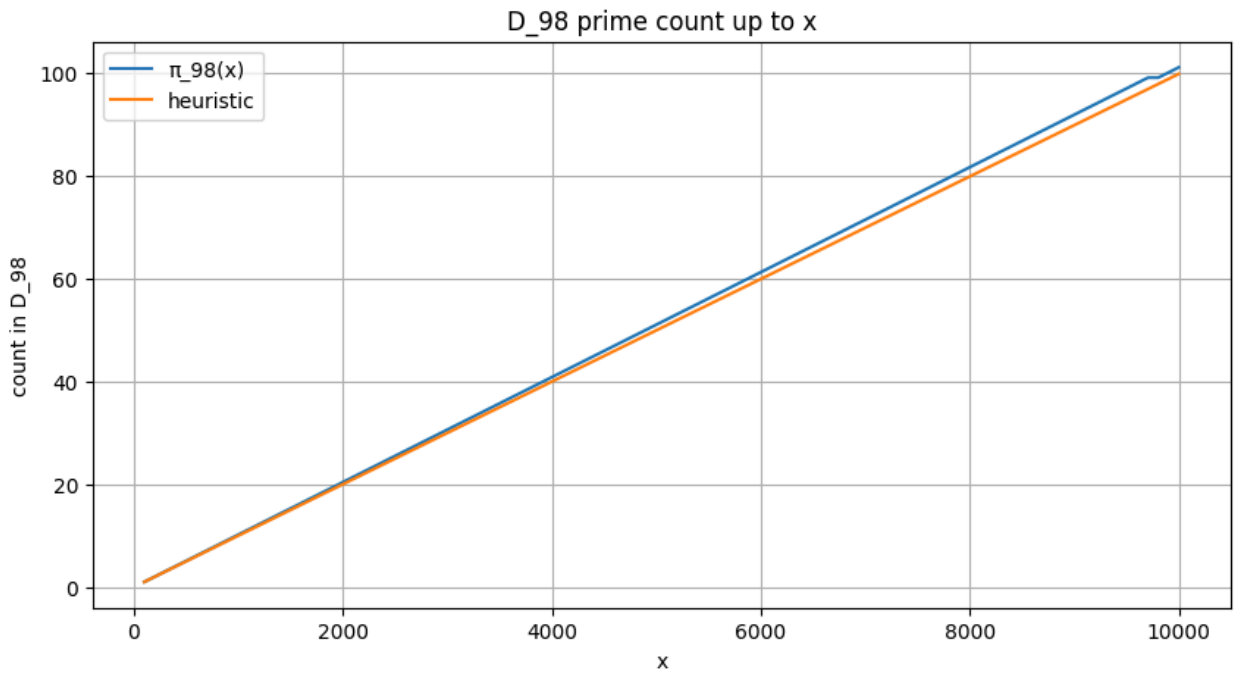
96 2.09


D_96 prime count up to x
π_96(x)
heuristic
count in D_96
x
0
20
40
60
80
100
0
2000
4000
6000
8000
10000

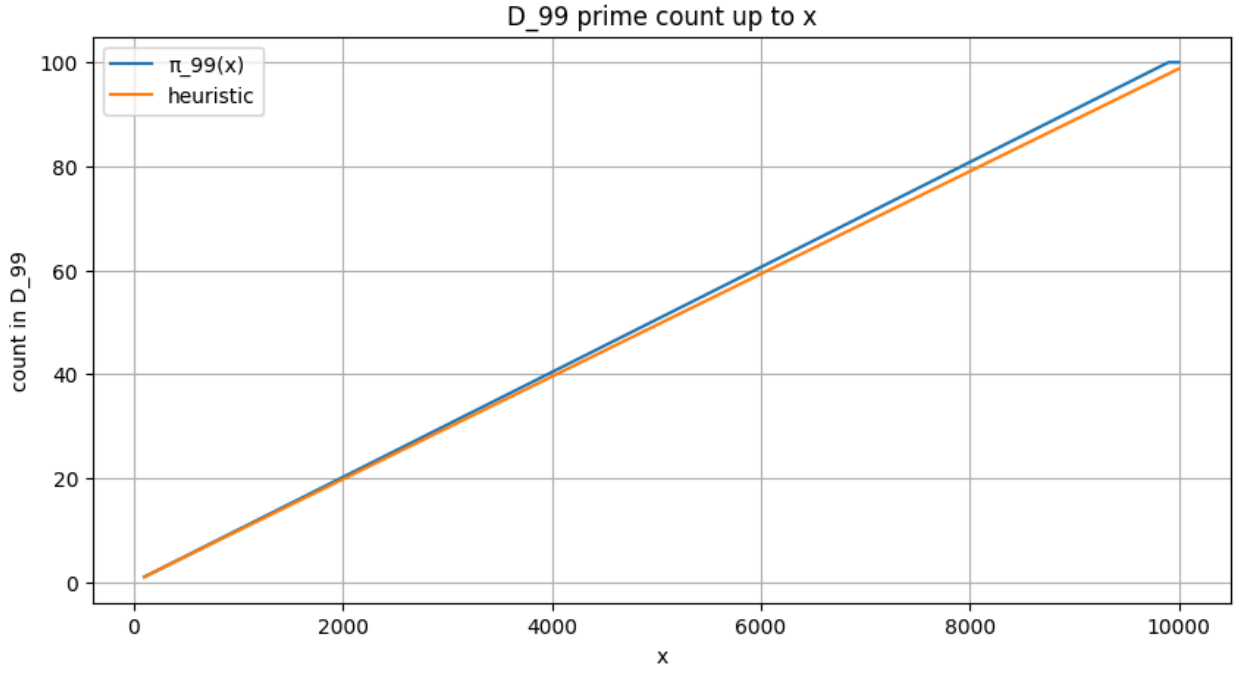
97 2.09


D_97 prime count up to x
π_97(x)
heuristic
count in D_97
x
0
20
40
60
80
100
0
2000
4000
6000
8000
10000

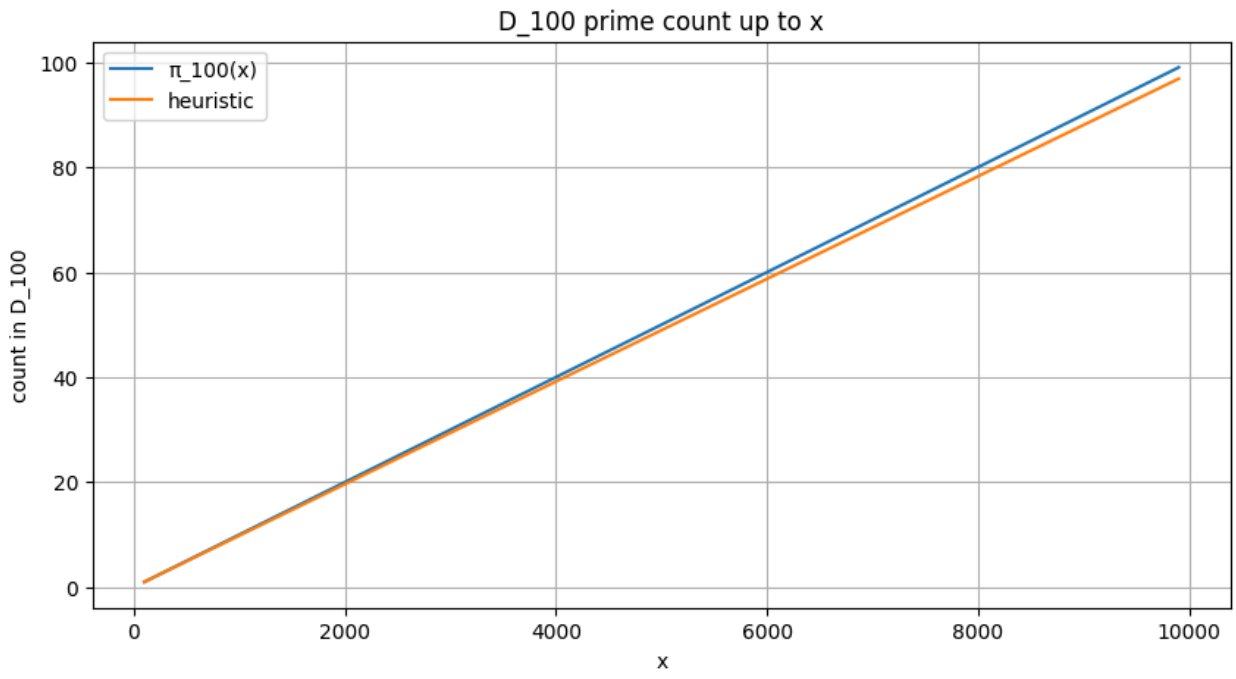
98 2.09

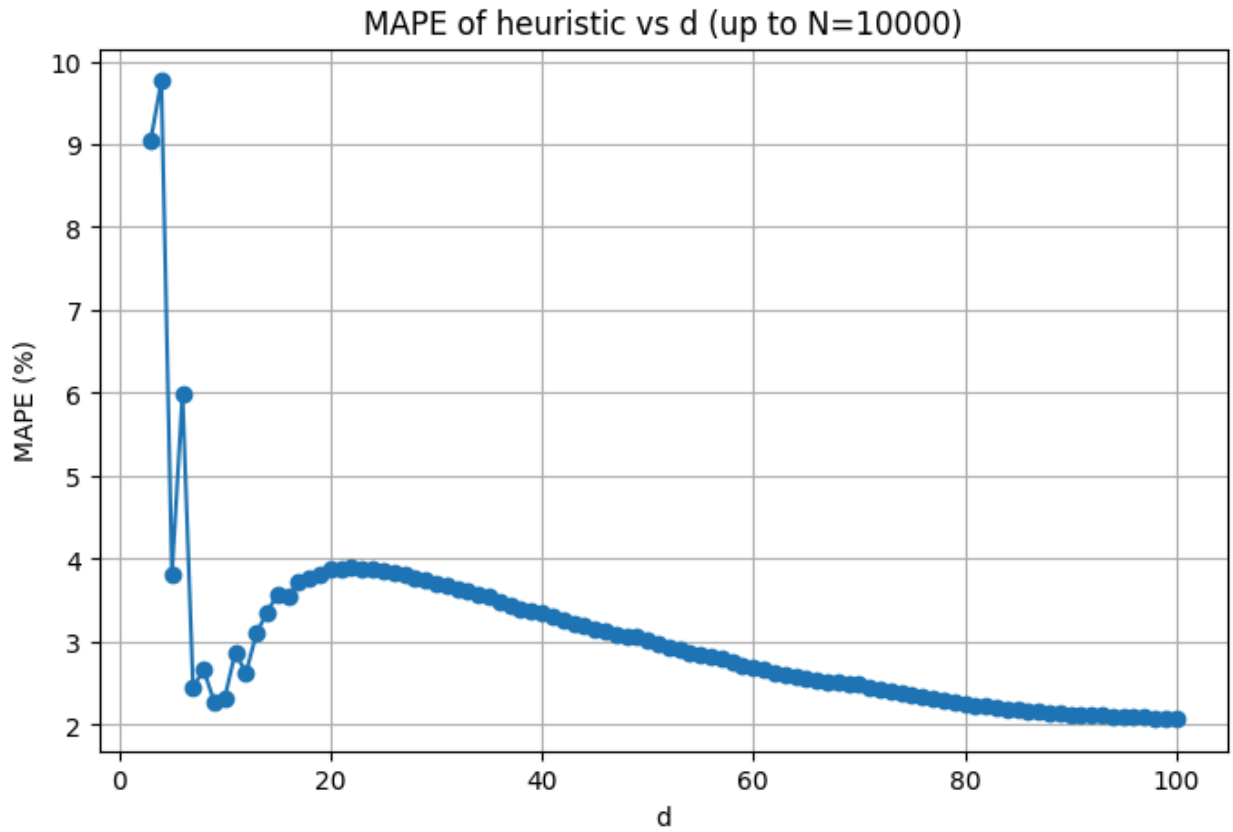


99 2.08



100 2.07


D_100 prime count up to x
π_100(x)
heuristic
count in D_100
x
0
20
40
60
80
100
0
2000
4000
6000
8000
10000


MAPE of heuristic vs d (up to N=10000)
MAPE (%)
d
2
3
4
5
6
7
8
9
10
0
20
40
60
80
100