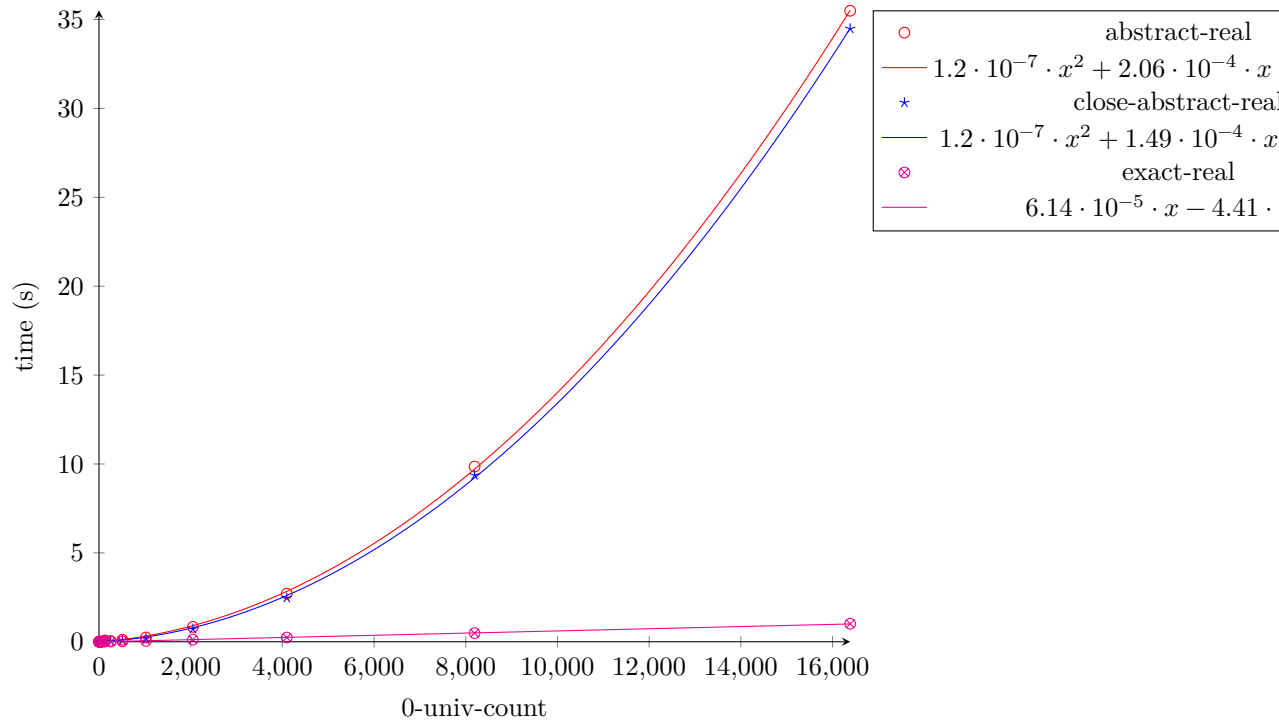Figure 1: timing-pattern

Figure 2: timing-n-polymorphic-universes param-1-n 0
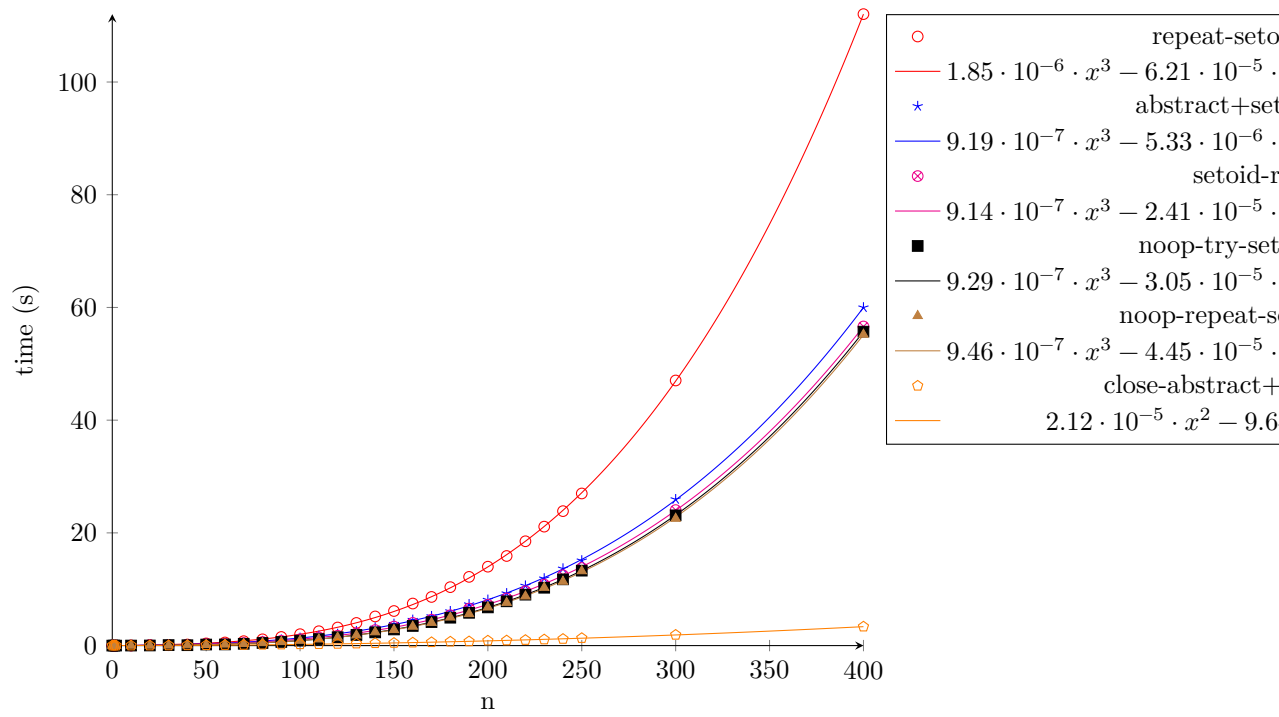
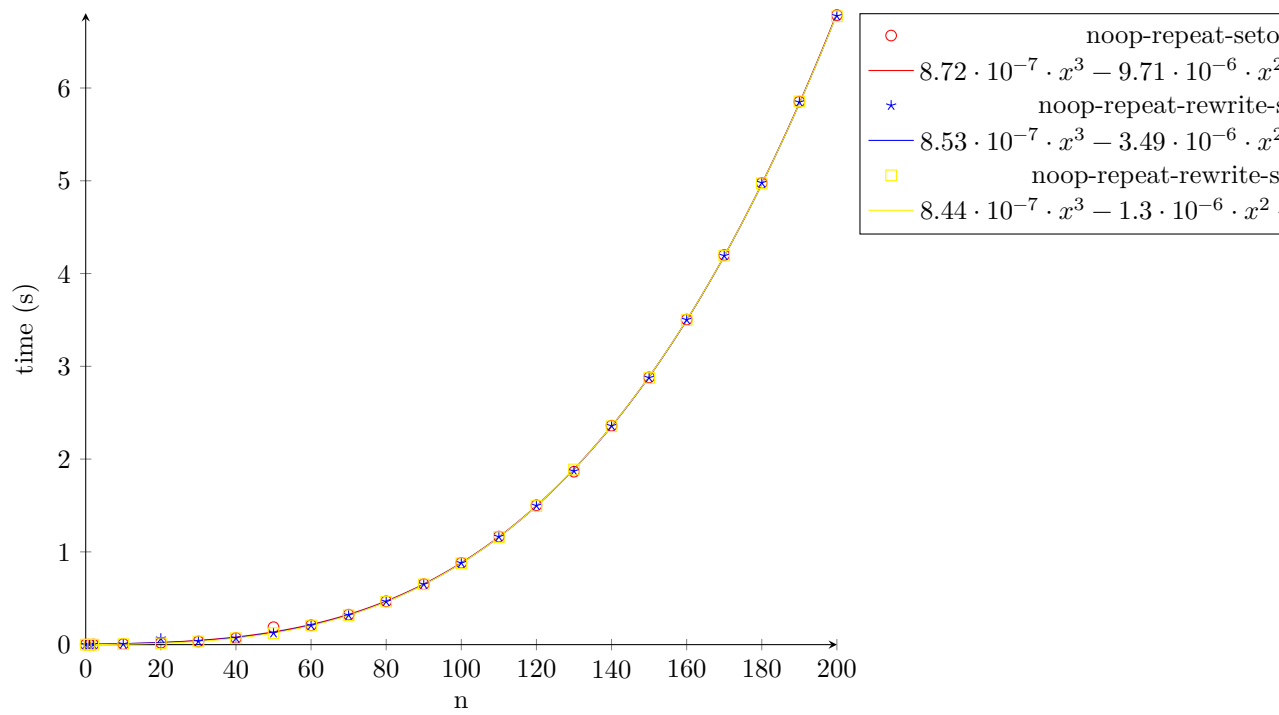Figure 3: timing-repeat-setoid-rewrite-under-binders

3

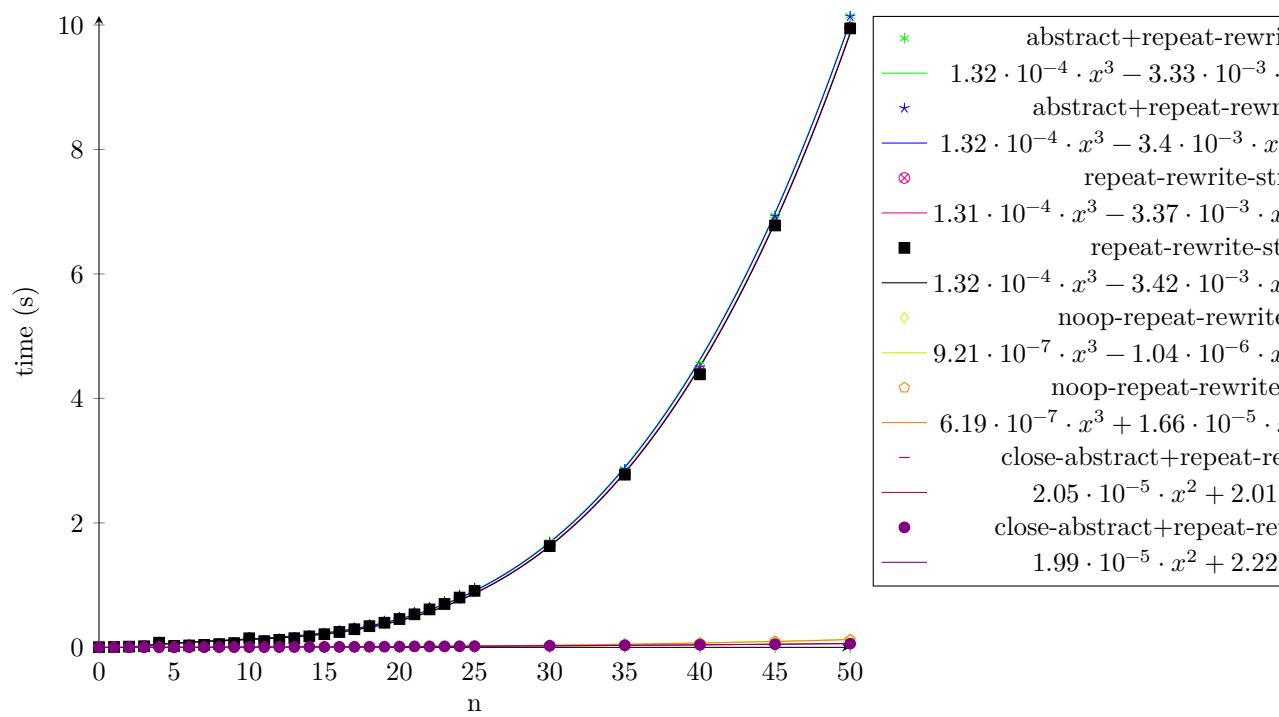Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

Figure 5: timing-rewrite-strat-under-binders
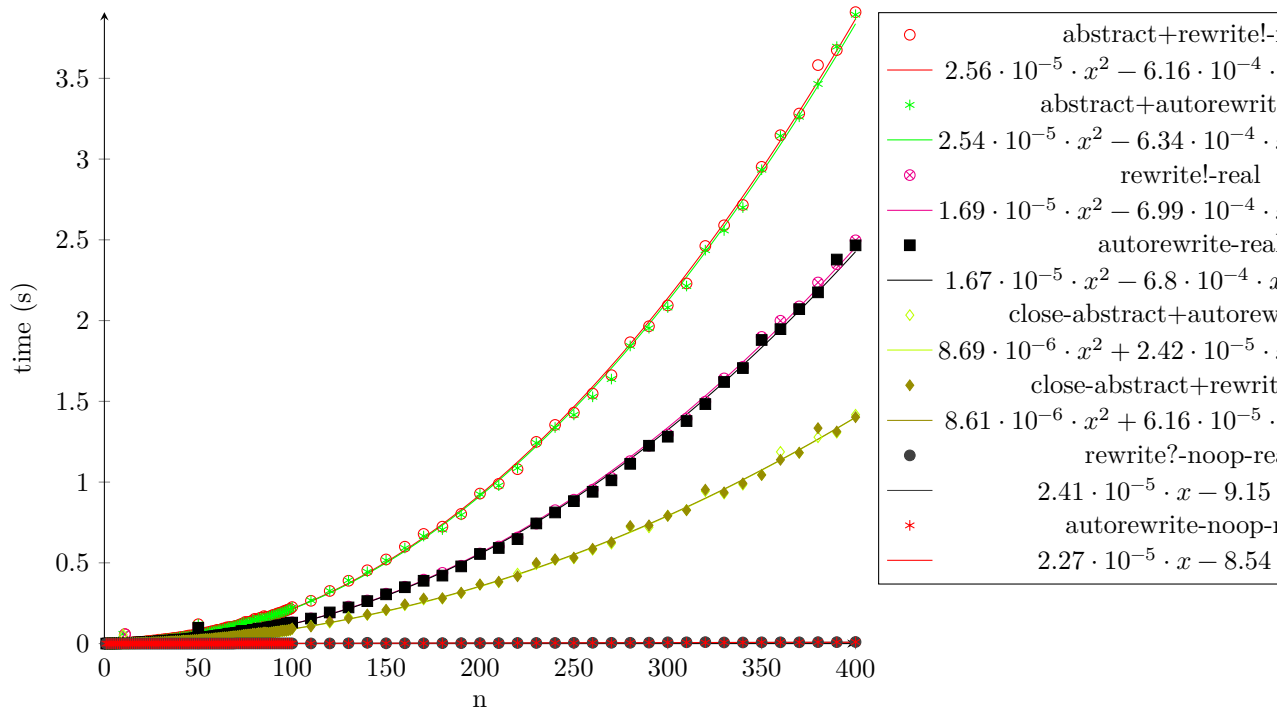
Figure 6: timing-rewrite-repeated-app-autorewrite

6
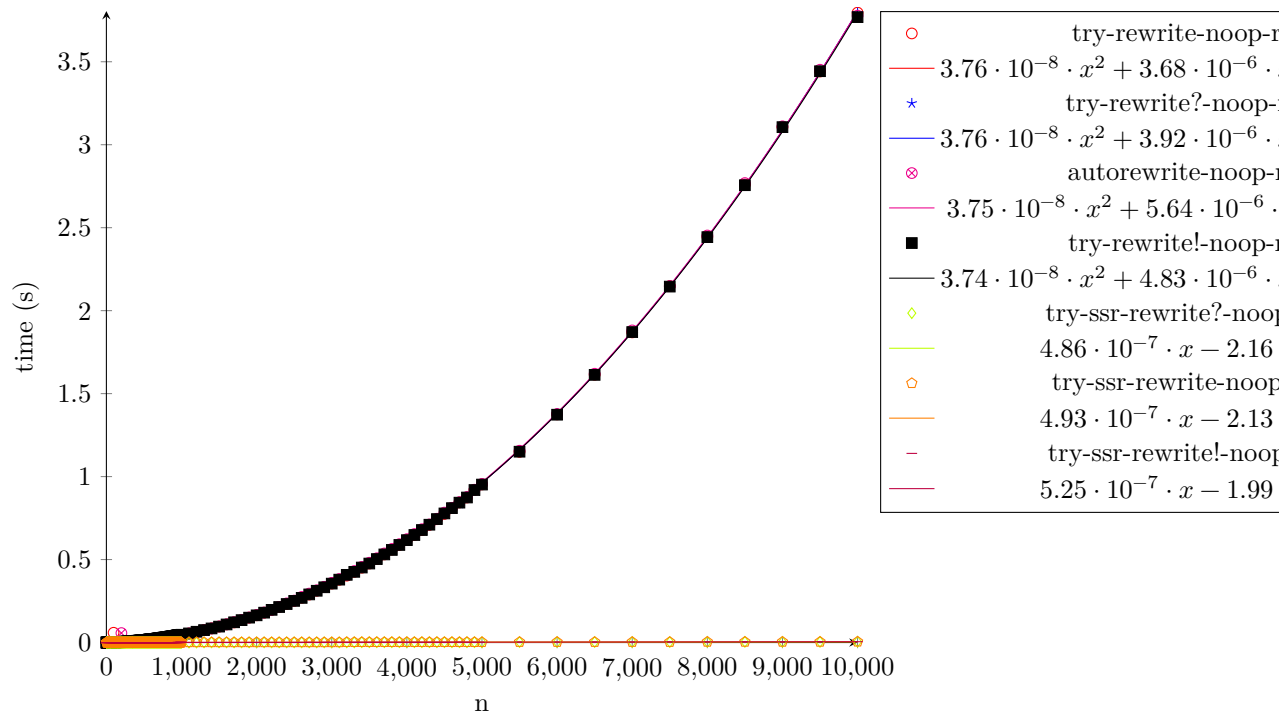
Figure 7: timing-rewrite-repeated-app-autorewrite-noop
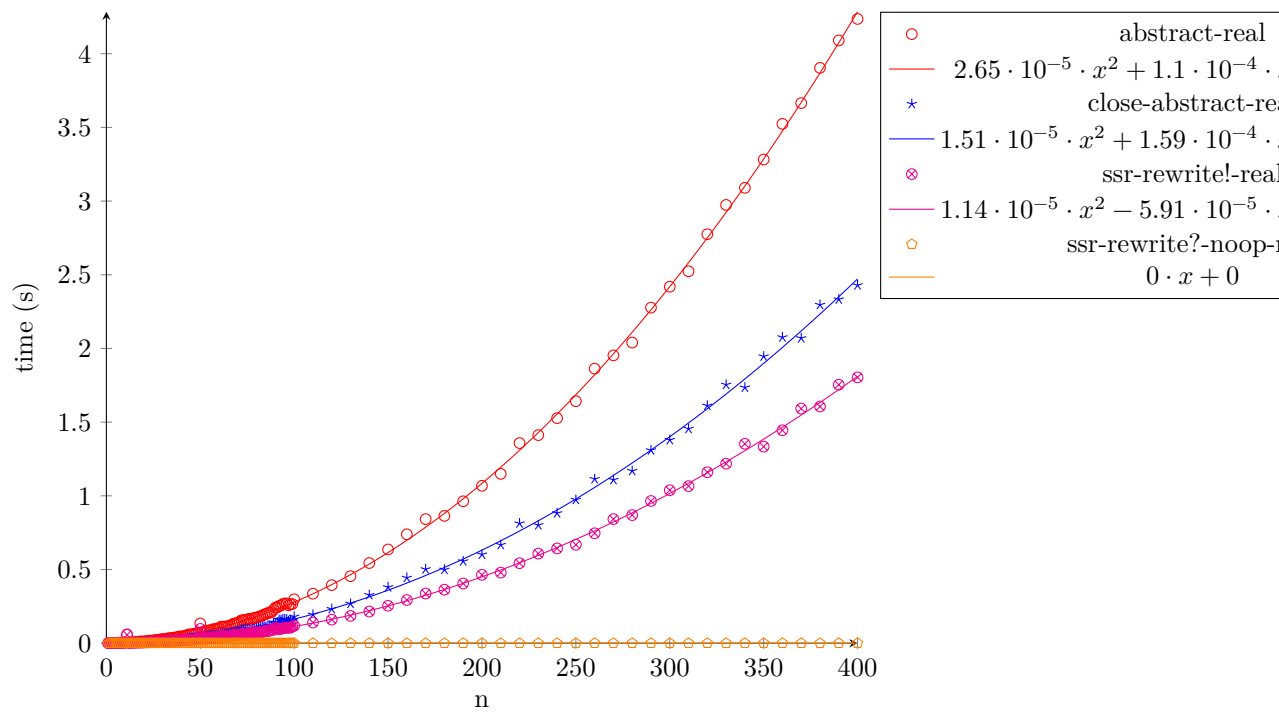
Figure 8: timing-rewrite-repeated-app-ssrrewrite

The legend in the figure contains:

- abstract-real
- $2.65 \cdot 10^{-5} \cdot x^2 + 1.1 \cdot 10^{-4} \cdot $
- close-abstract-rea
- $1.51 \cdot 10^{-5} \cdot x^2 + 1.59 \cdot 10^{-4} \cdot $
- ssr-rewrite!-real
- $1.14 \cdot 10^{-5} \cdot x^2 - 5.91 \cdot 10^{-5} \cdot $
- ssr-rewrite?-noop-
- $0 \cdot x + 0$
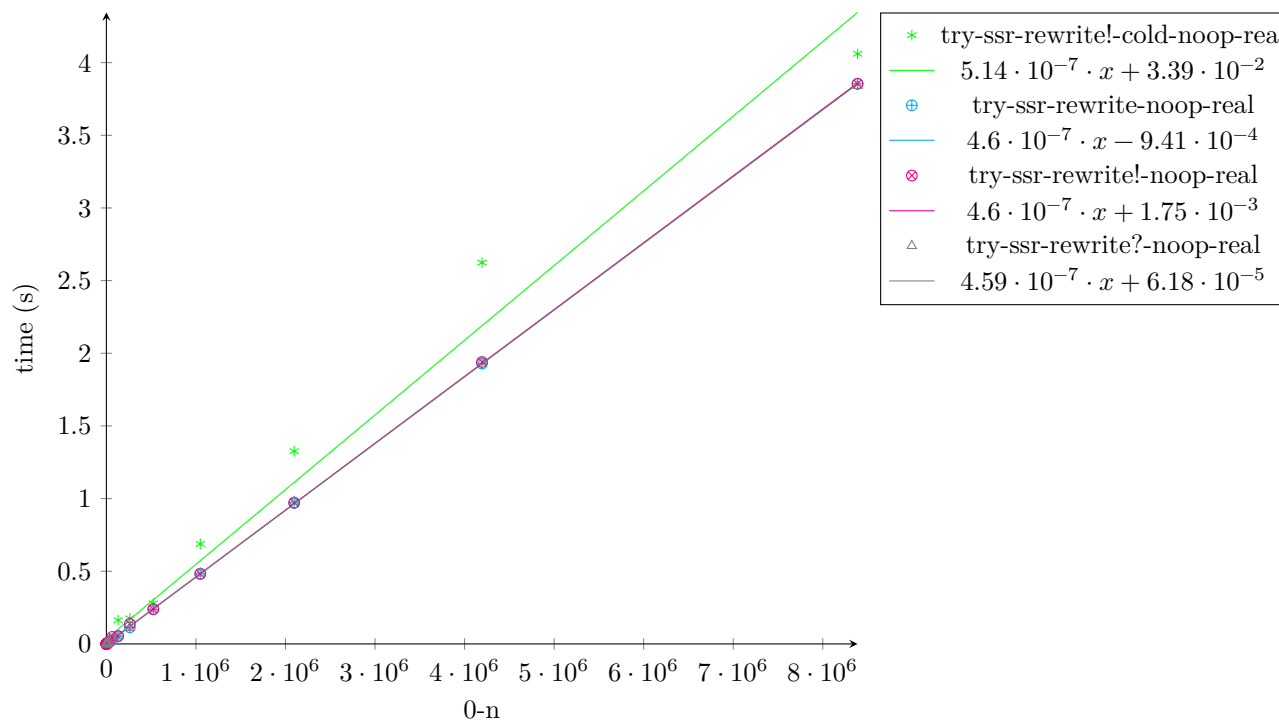
Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn 1

9
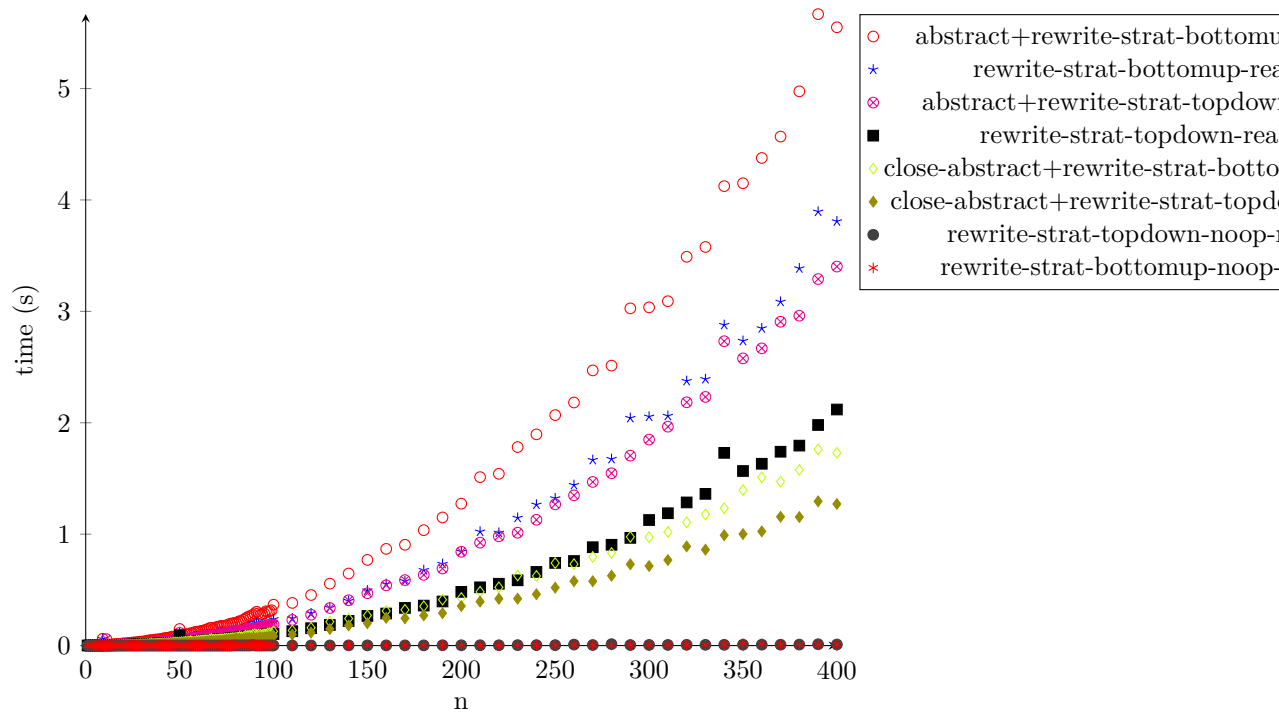
Figure 10: timing-rewrite-repeated-app-rewrite-strat

The figure legend (partially cut off) reads:

- abstract+rewrite-strat-bottomu...
- rewrite-strat-bottomup-rea...
- abstract+rewrite-strat-topdow...
- rewrite-strat-topdown-rea...
- close-abstract+rewrite-strat-botto...
- close-abstract+rewrite-strat-topd...
- rewrite-strat-topdown-noop-...
- rewrite-strat-bottomup-noop-...

time (s)

abstra

$7.59 \cdot 10^{-9} \cdot x^3 + 2.18 \cdot 10^{-6} \cdot x$

close-abs

$8.02 \cdot 10^{-9} \cdot x^3 + 8.46 \cdot 10^{-7} \cdot x$

pose-build-a

$-4.38 \cdot 10^{-10} \cdot x^3 + 1.35 \cdot 10^{-6} \cdot x$

fast-rev

$-4.37 \cdot 10^{-10} \cdot x^3 + 1.35 \cdot 10^{-6} \cdot x$

refin

$1.53 \cdot 10^{-9} \cdot x^2 + 1.12$

$1.23 \cdot 10^{-5} \cdot x$

n

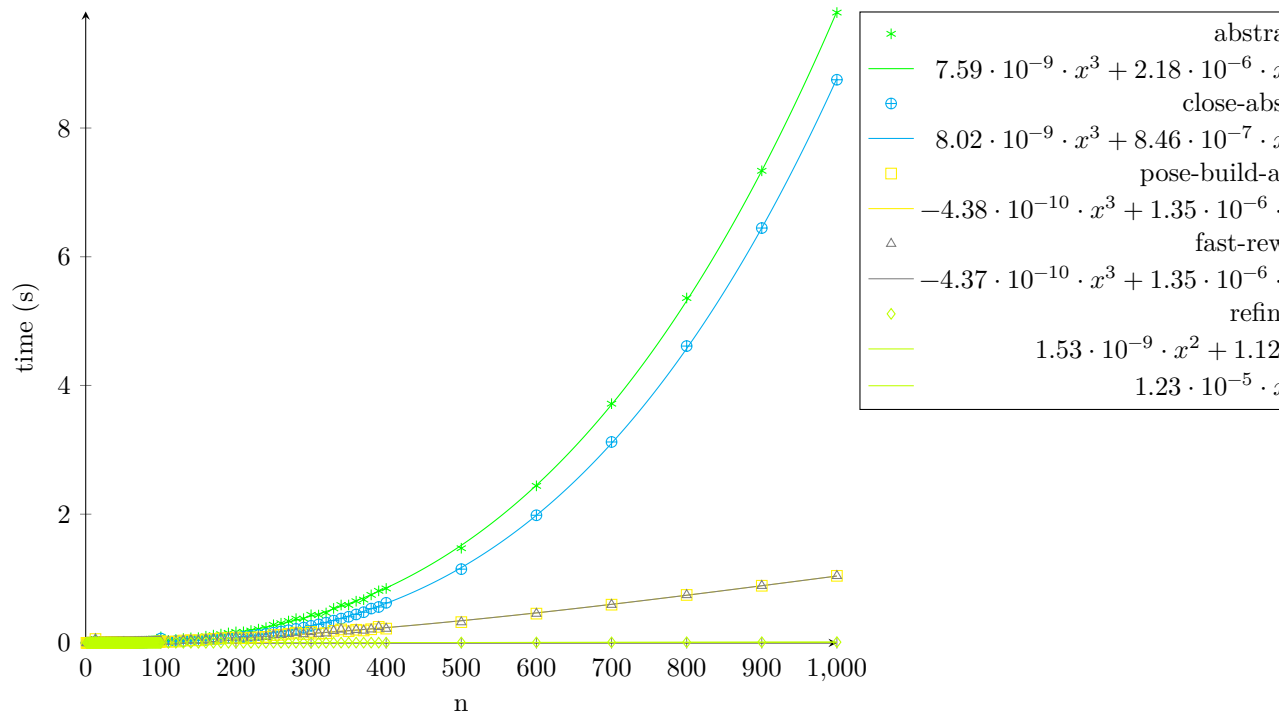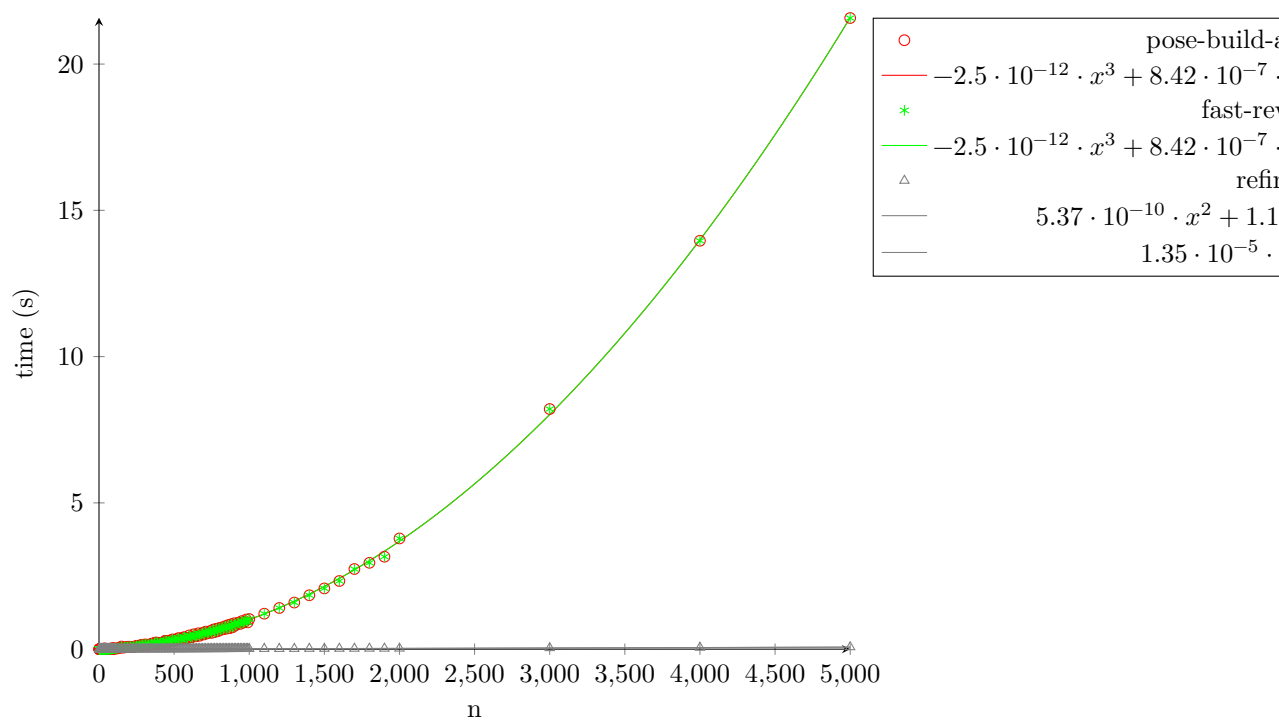Figure 11: timing-rewrite-repeated-app-fast-rewrite

11

Figure 12: timing-rewrite-repeated-app-fast-rewrite-no-abstract

12

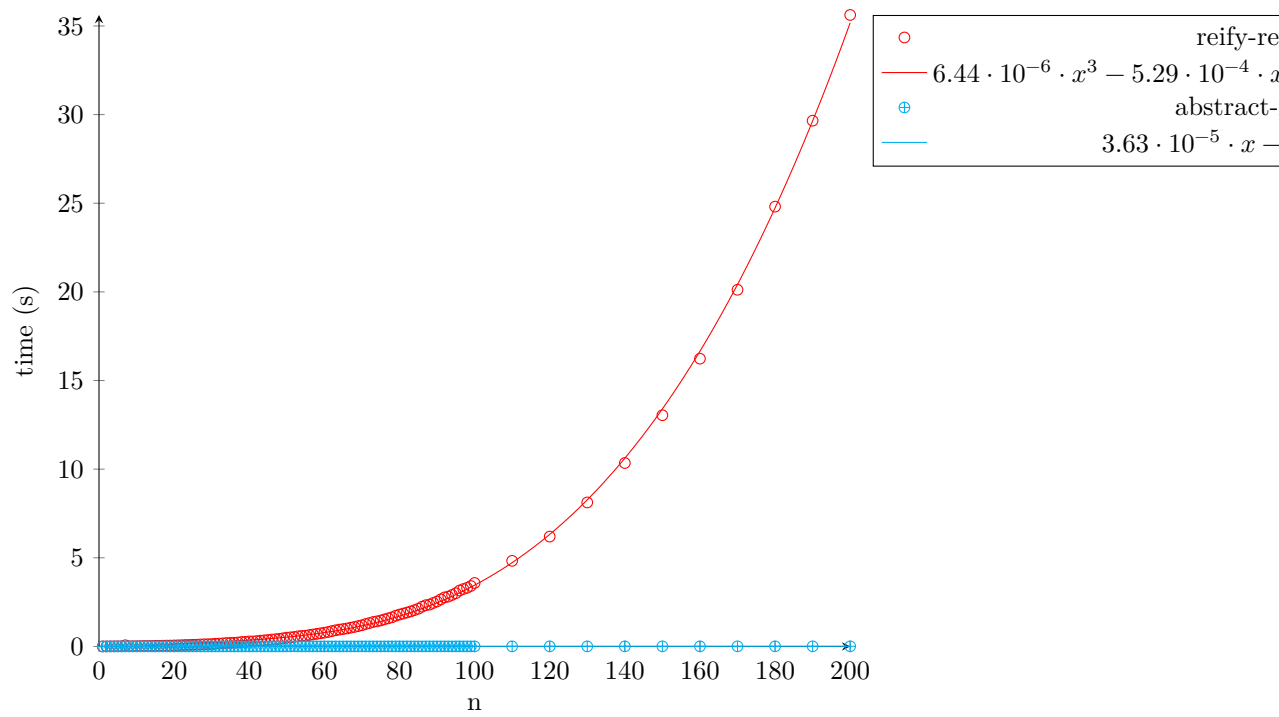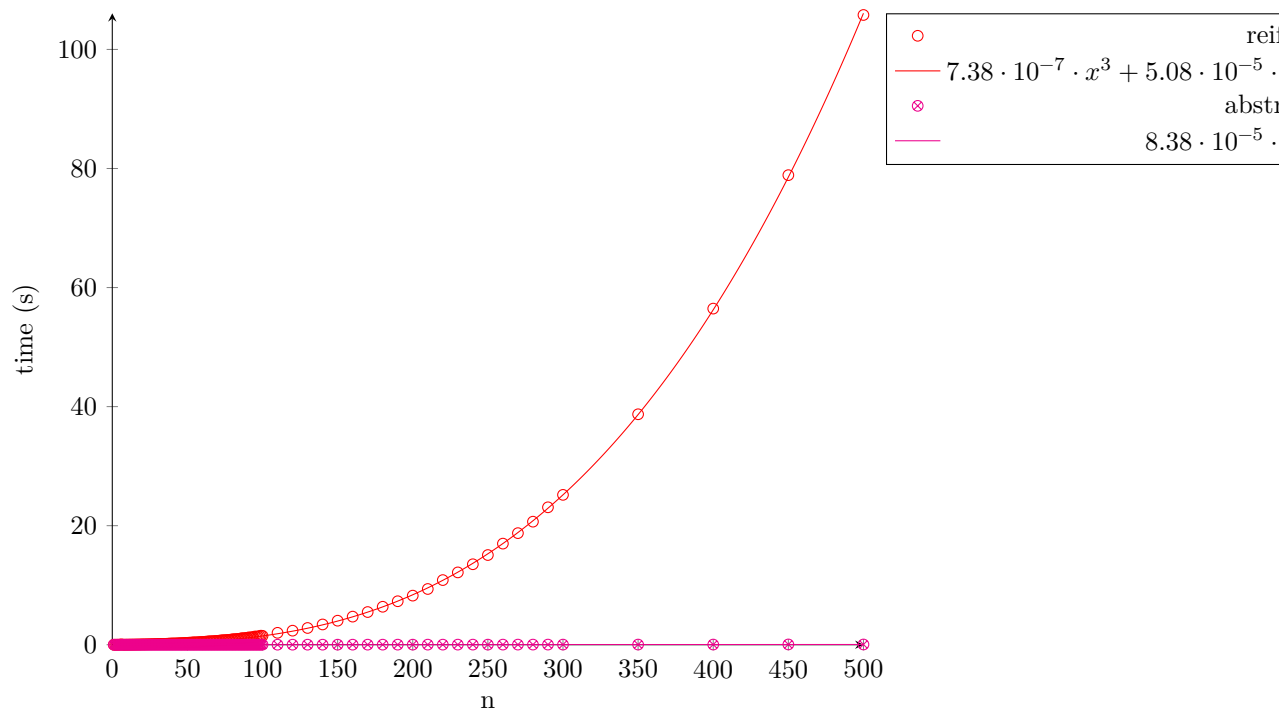Figure 13: timing-typeclass-reification-let-in-HOAS

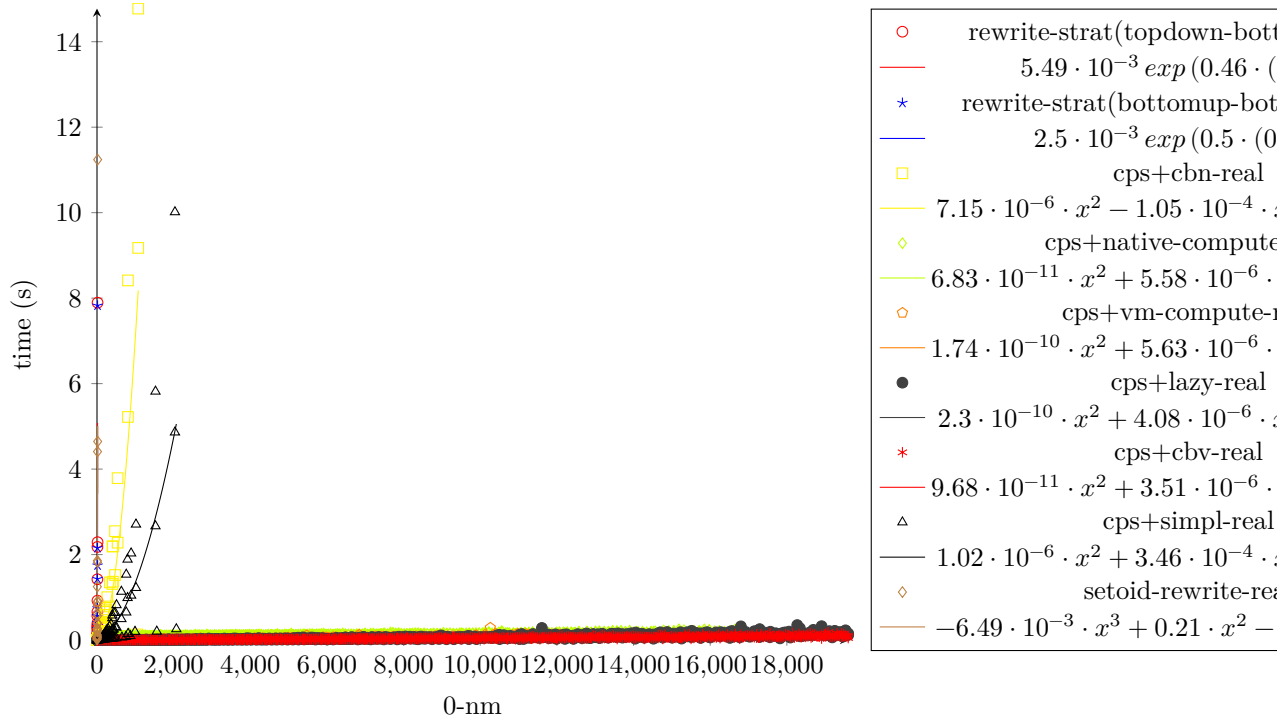Figure 14: timing-typeclass-reification-let-in-PHOAS

Figure 15: timing-rewrite-lift-lets-map param-1-n 1, param-2-m 1
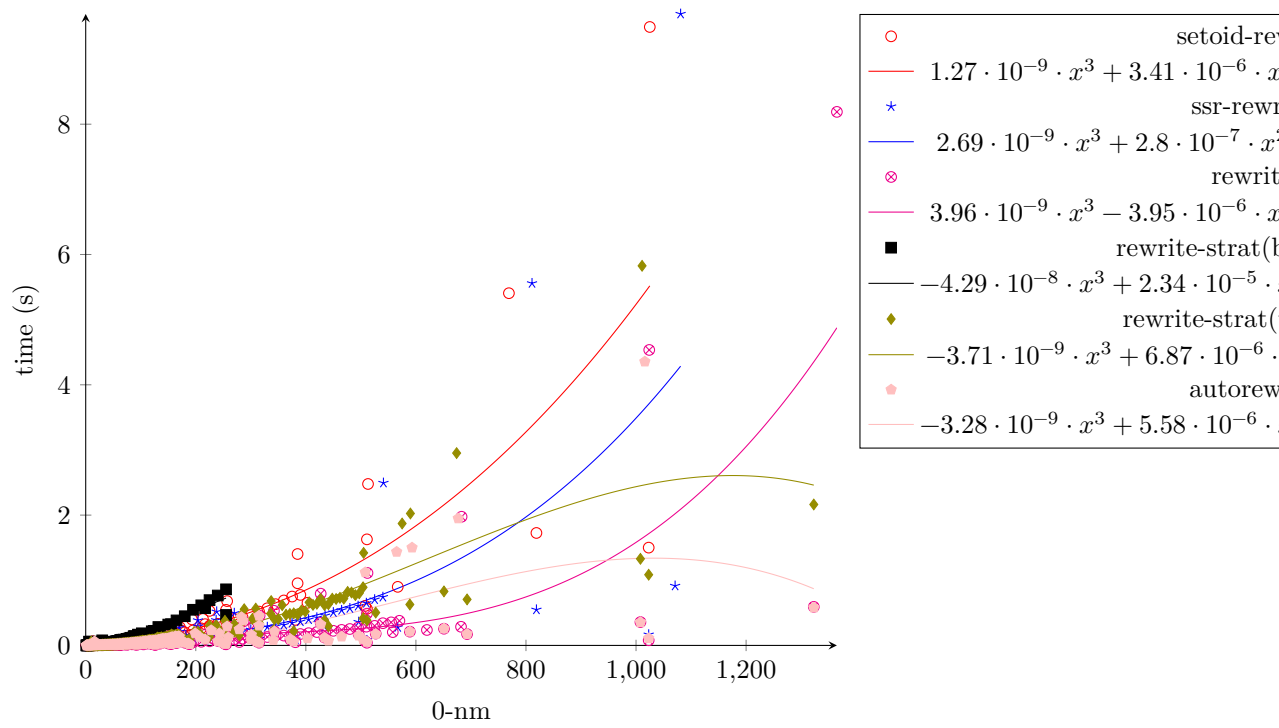
Figure 16: timing-rewrite-plus-0-tree param-1-n   0, param-2-m   1, param-3-input-size 5, param-4-output-size 3, param-5-num-rewrites 1
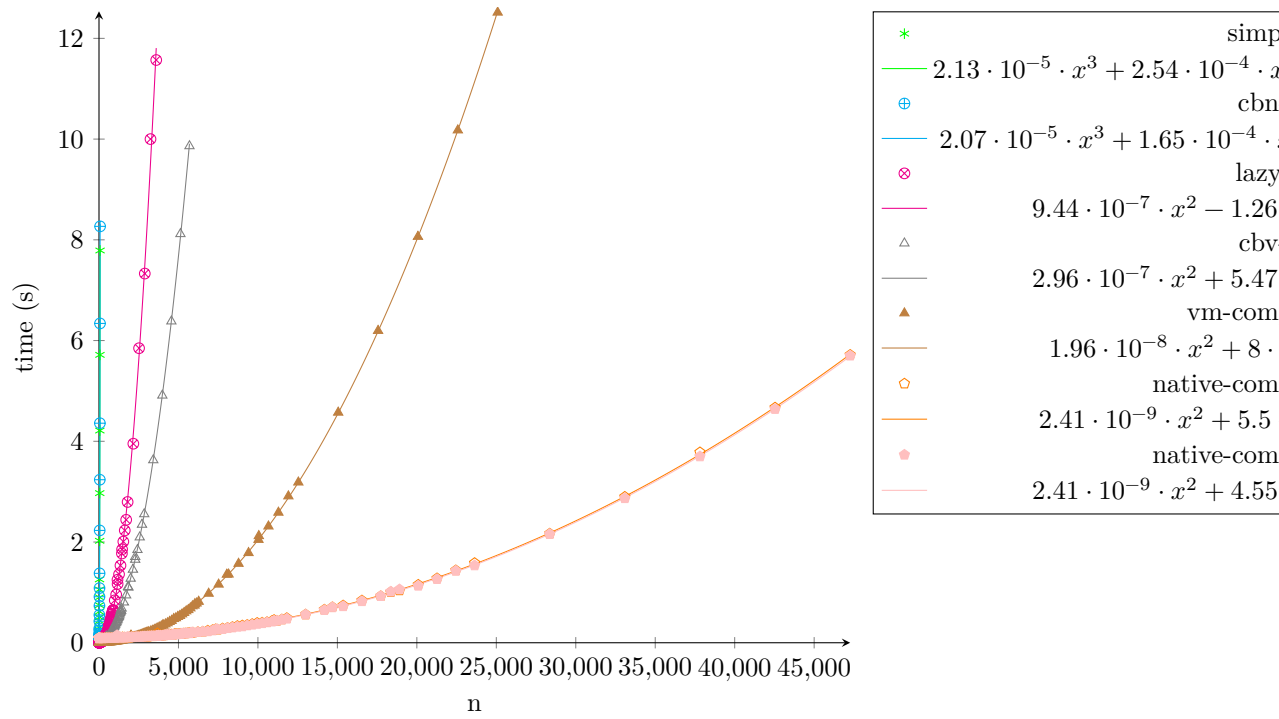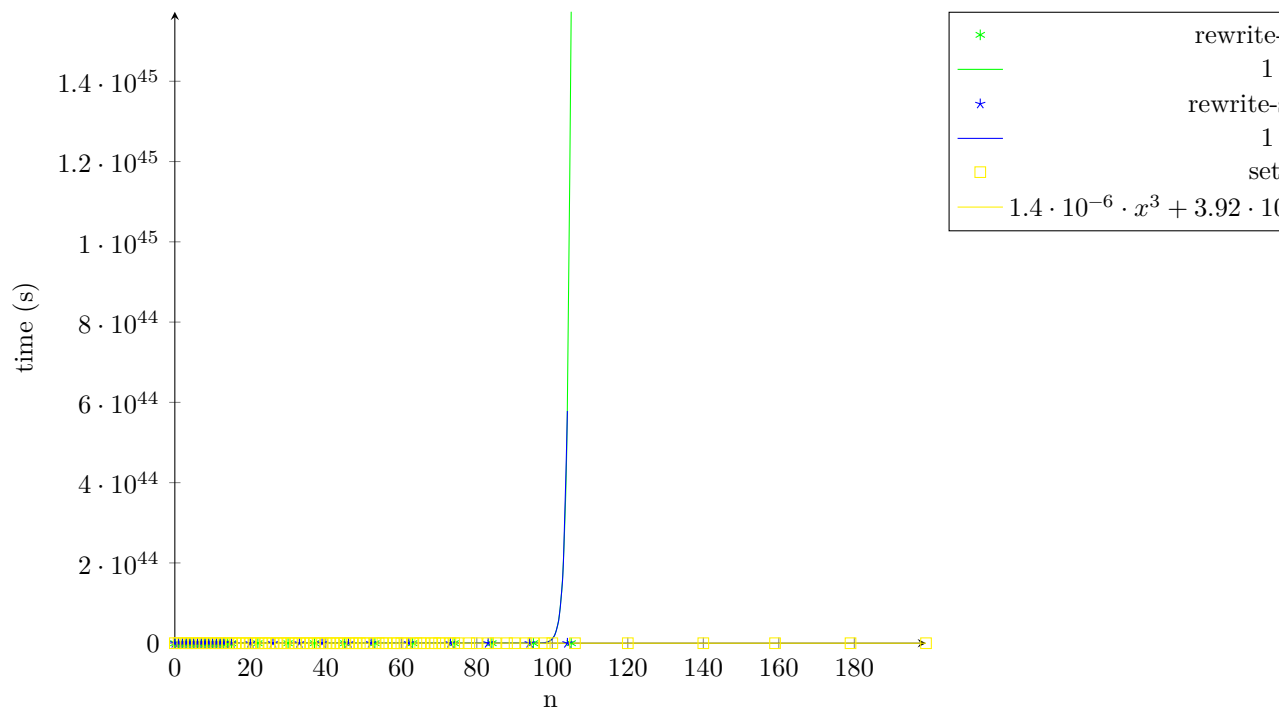
Figure 17: timing-sieve-of-eratosthenes

Figure 18: timing-rewrite-under-lets-plus-0

time (s)

n

abstract-real

$2.66 \cdot 10^{-6} \cdot x^2 - 1.66 \cdot 10^{-3}$

fast-rewrite-real

$2.39 \cdot 10^{-6} \cdot x^2 - 1.7 \cdot 10^{-3}$

refine-real

$3.29 \cdot 10^{-7} \cdot x^2 - 2.73 \cdot 10^{-4} \cdot x$

$4.11 \cdot 10^{-4} \cdot x - 4.91 \cdot$

type-admit-real

$3.74 \cdot 10^{-7} \cdot x^2 - 3.14 \cdot 10^{-4} \cdot x$

check-admit-cast-re

$3.65 \cdot 10^{-7} \cdot x^2 - 3.02 \cdot 10^{-4} \cdot x$

close-abstract-rea

$2.71 \cdot 10^{-7} \cdot x^2 + 4.32 \cdot 10^{-5} \cdot x$

type-admit-cast-re

$3.36 \cdot 10^{-7} \cdot x^2 - 2.61 \cdot 10^{-4} \cdot x$

check-pf-cast-rea

$3.39 \cdot 10^{-7} \cdot x^2 - 2.54 \cdot 10^{-4} \cdot x$

type-pf-cast-real

$3.24 \cdot 10^{-7} \cdot x^2 - 2.41 \cdot 10^{-4} \cdot x$

check-admit-real

$3.17 \cdot 10^{-7} \cdot x^2 - 2.41 \cdot 10^{-4} \cdot x$

build-eval-thunk-re

$1.1 \cdot 10^{-4} \cdot x - 6.55 \cdot$

build-thunk-real

$1.09 \cdot 10^{-4} \cdot x - 6.88 \cdot$

check-I-real

$1.96 \cdot 10^{-5} \cdot x - 6.03 \cdot$

type-I-real

$1.88 \cdot 10^{-5} \cdot x - 6.16 \cdot$

build-I-real

$1.05 \cdot 10^{-5} \cdot x - 4.98 \cdot$

build-pf-cast-real

$9.81 \cdot 10^{-6} \cdot x - 5.12 \cdot$

build-admit-real

$9.5 \cdot 10^{-6} \cdot x - 4.86 \cdot$

build-admit-cast-re

$9.66 \cdot 10^{-6} \cdot x - 4.94 \cdot$

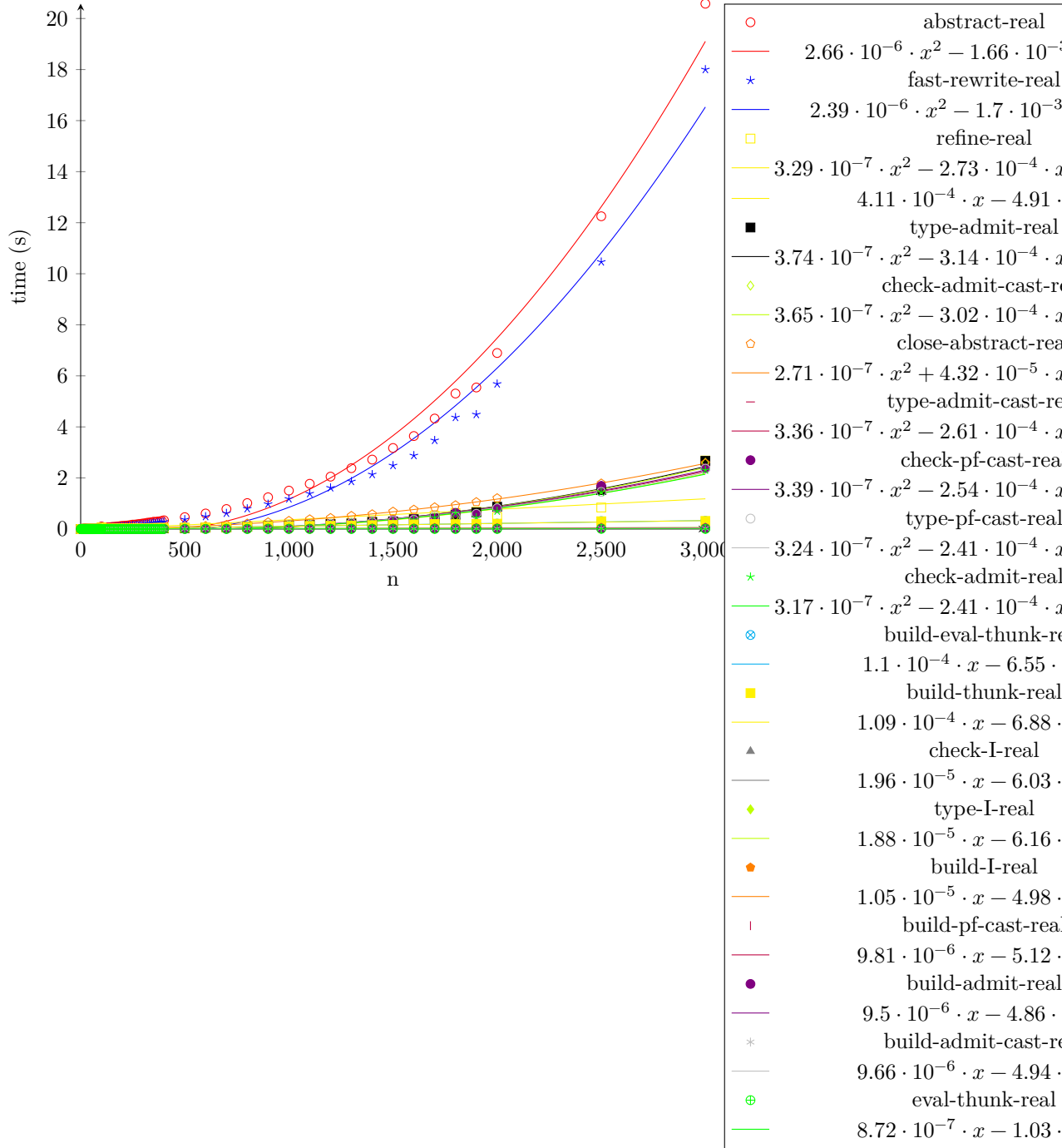eval-thunk-real

$8.72 \cdot 10^{-7} \cdot x - 1.03 \cdot$

Figure 19: timing-rewrite-repeated-app-fast-rewrite-ltac2