Figure 1: timing-pattern

1

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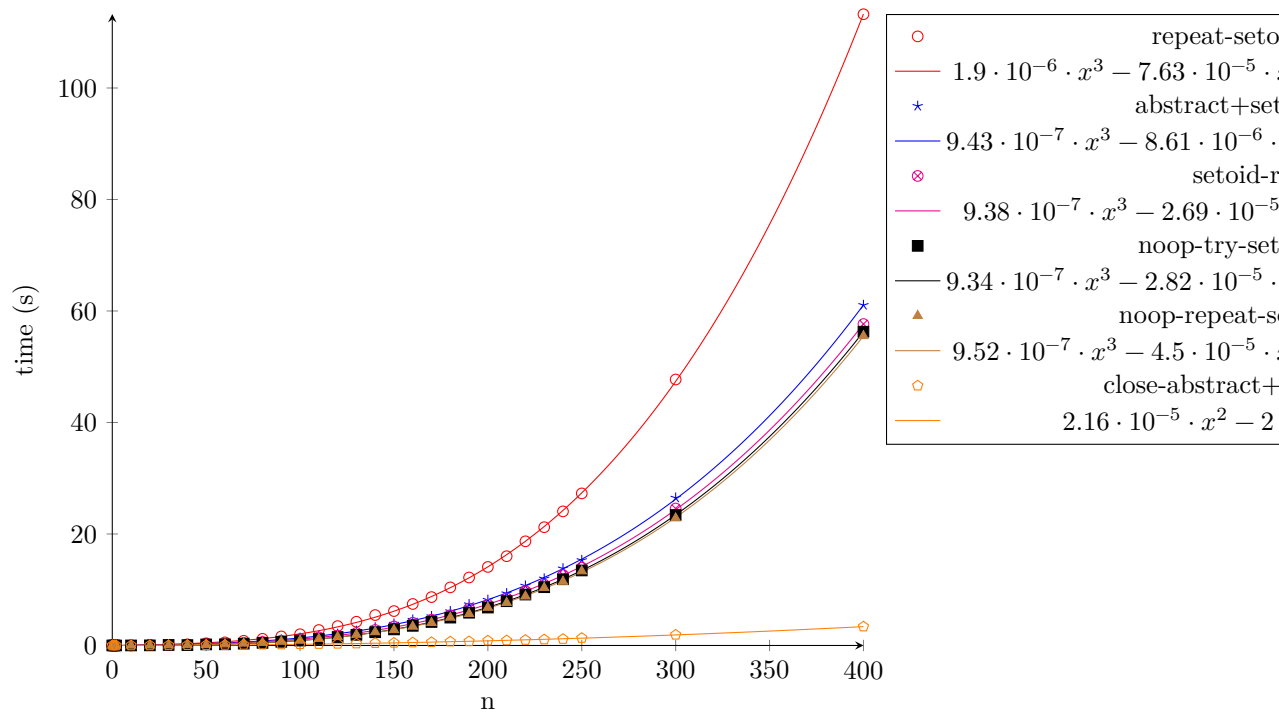
Figure 3: timing-repeat-setoid-rewrite-under-binders

The plot shows the following series and fits:

- repeat-seto...
  $1.9 \cdot 10^{-6} \cdot x^3 - 7.63 \cdot 10^{-5} \cdot \ldots$
- abstract+set...
  $9.43 \cdot 10^{-7} \cdot x^3 - 8.61 \cdot 10^{-6} \cdot \ldots$
- setoid-r...
  $9.38 \cdot 10^{-7} \cdot x^3 - 2.69 \cdot 10^{-5} \ldots$
- noop-try-set...
  $9.34 \cdot 10^{-7} \cdot x^3 - 2.82 \cdot 10^{-5} \cdot \ldots$
- noop-repeat-s...
  $9.52 \cdot 10^{-7} \cdot x^3 - 4.5 \cdot 10^{-5} \cdot \ldots$
- close-abstract+...
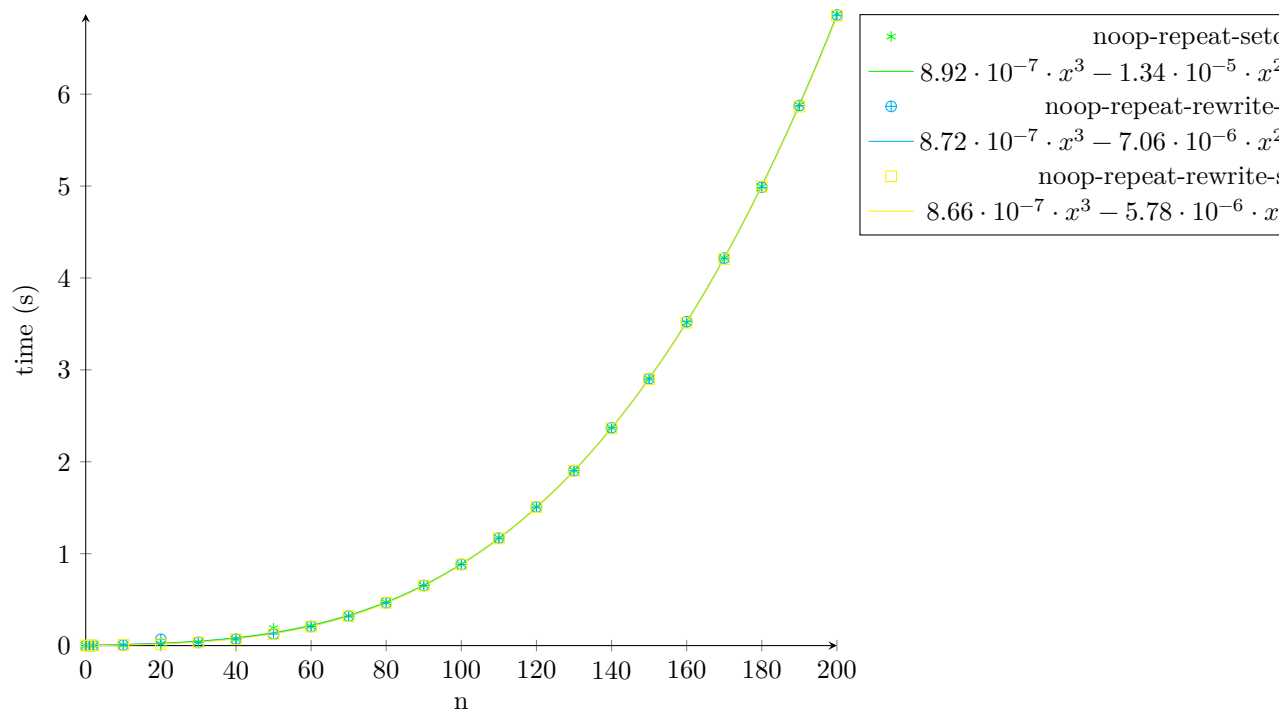 $2.16 \cdot 10^{-5} \cdot x^2 - 2 \ldots$

3

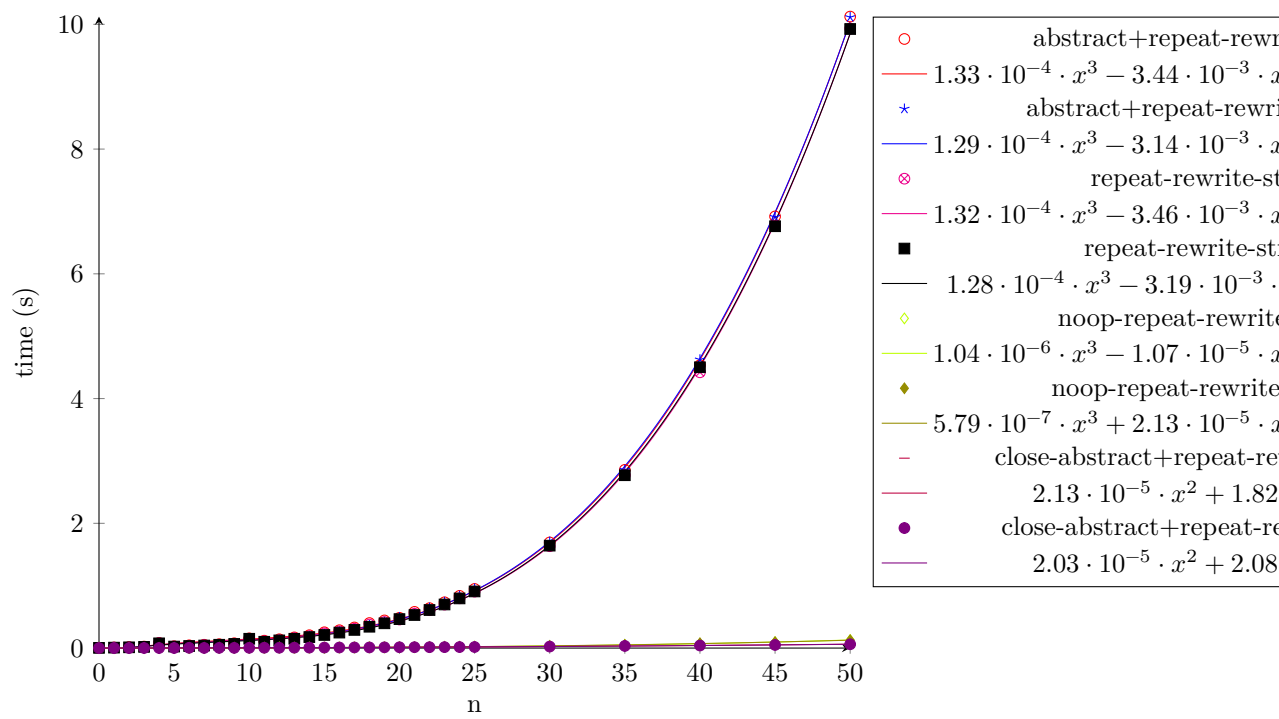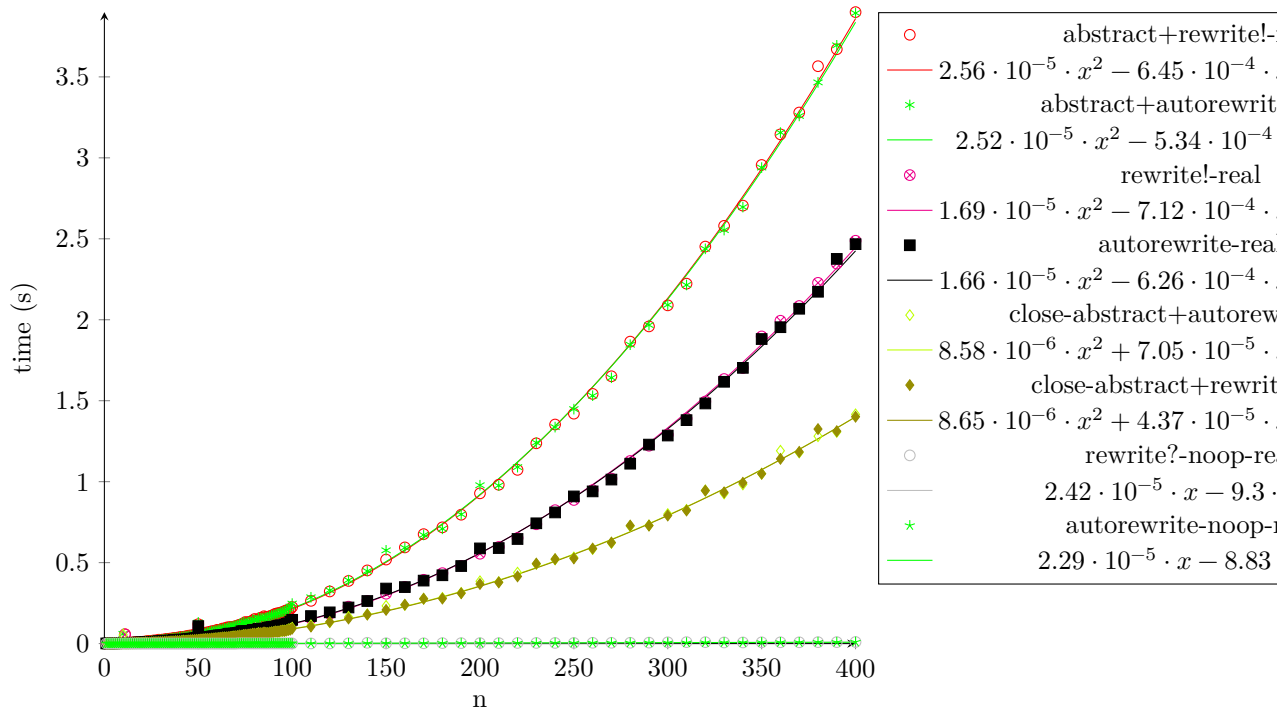Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

4

Figure 5: timing-rewrite-strat-under-binders

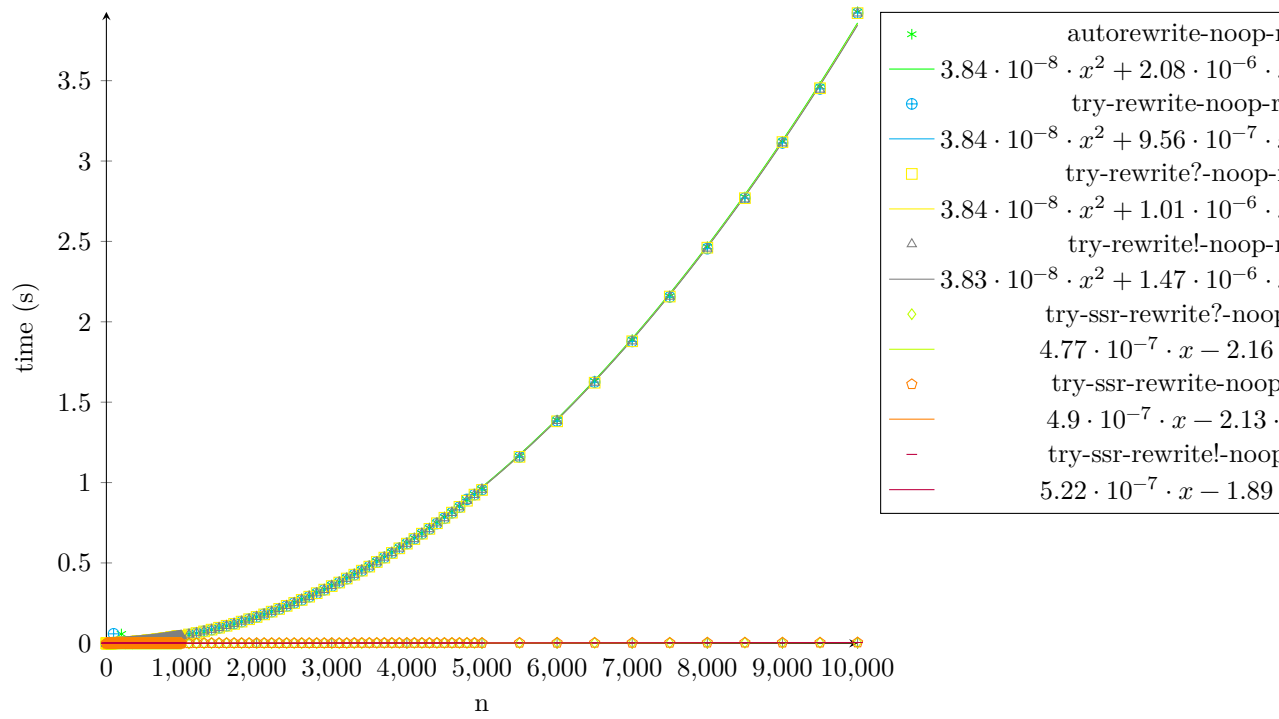Figure 6: timing-rewrite-repeated-app-autorewrite

Figure 7: timing-rewrite-repeated-app-autorewrite-noop

The legend entries in the figure read:

- autorewrite-noop-r
- $3.84 \cdot 10^{-8} \cdot x^2 + 2.08 \cdot 10^{-6} \cdot$
- try-rewrite-noop-r
- $3.84 \cdot 10^{-8} \cdot x^2 + 9.56 \cdot 10^{-7} \cdot$
- try-rewrite?-noop-
- $3.84 \cdot 10^{-8} \cdot x^2 + 1.01 \cdot 10^{-6} \cdot$
- try-rewrite!-noop-r
- $3.83 \cdot 10^{-8} \cdot x^2 + 1.47 \cdot 10^{-6} \cdot$
- try-ssr-rewrite?-noop
- $4.77 \cdot 10^{-7} \cdot x - 2.16$
- try-ssr-rewrite-noop
- $4.9 \cdot 10^{-7} \cdot x - 2.13 \cdot$
- try-ssr-rewrite!-noop
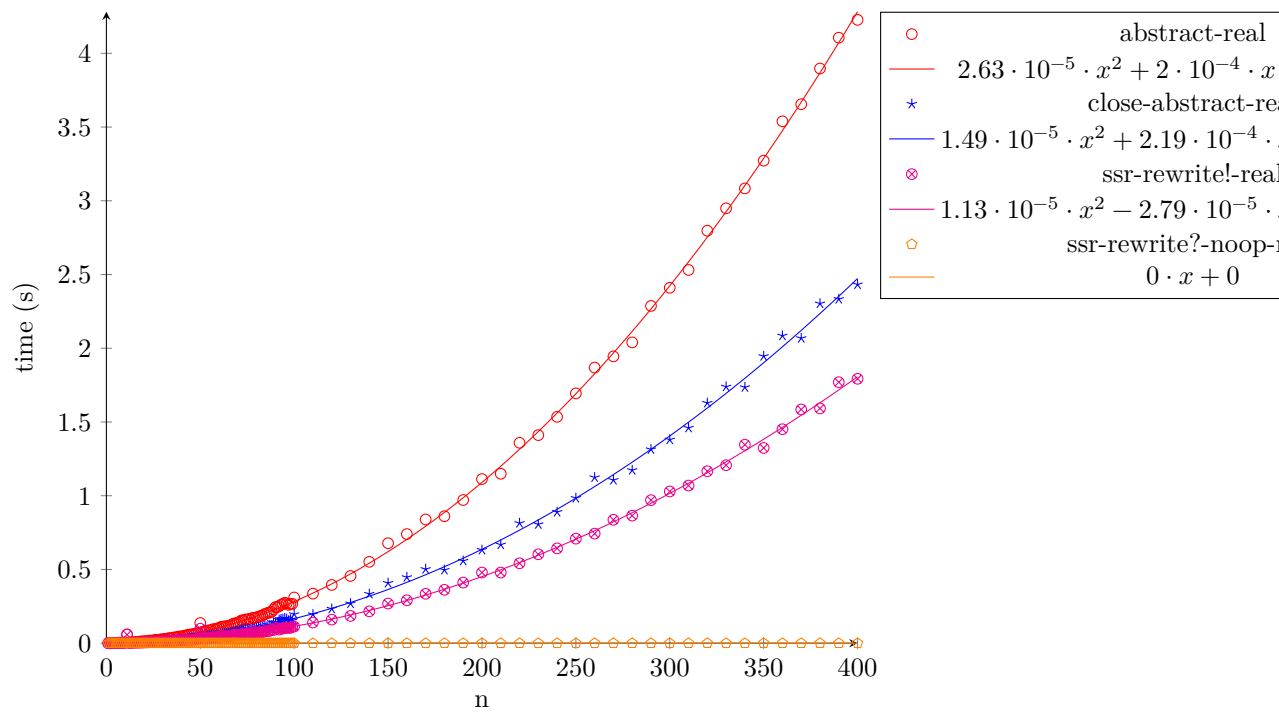- $5.22 \cdot 10^{-7} \cdot x - 1.89$

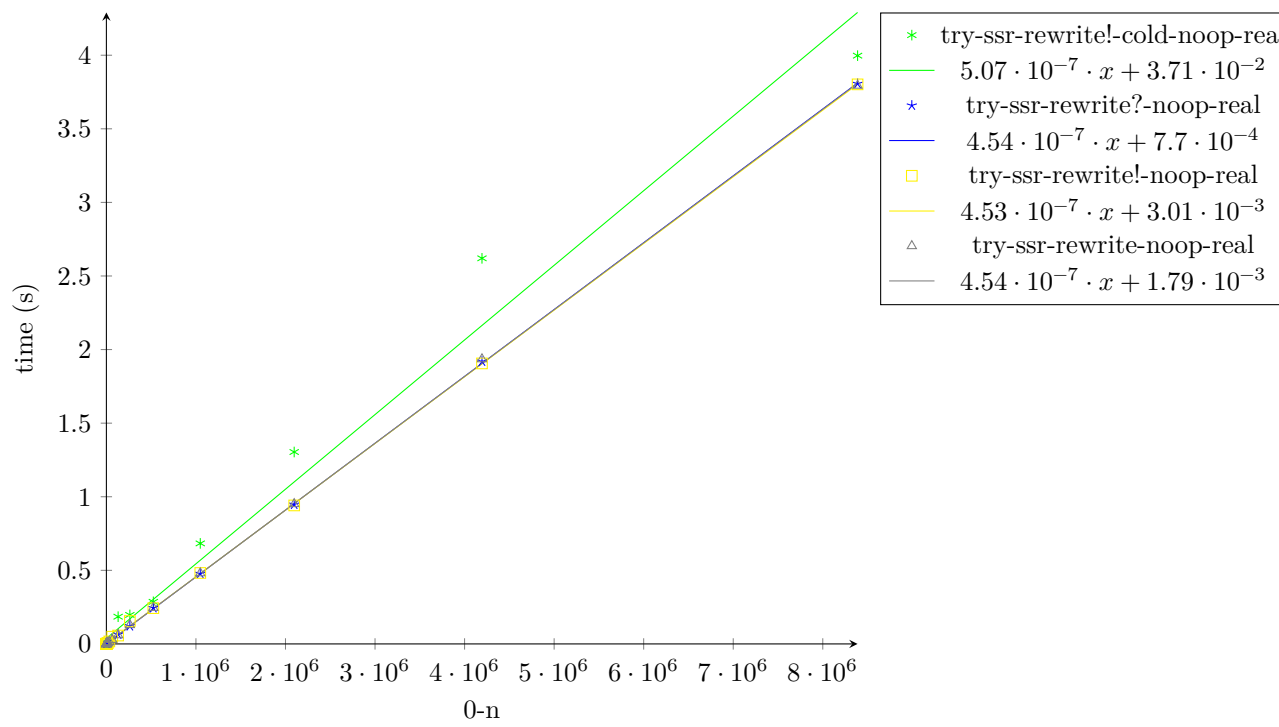Figure 8: timing-rewrite-repeated-app-ssrrewrite

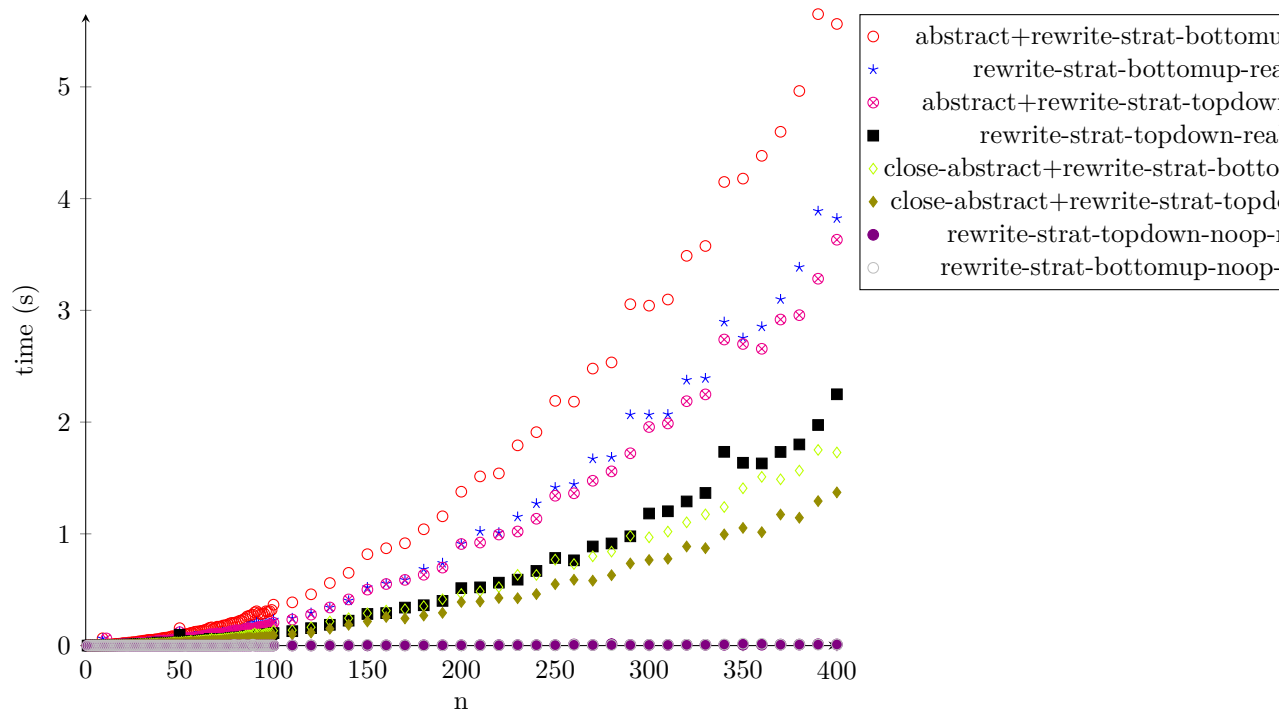Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn   1

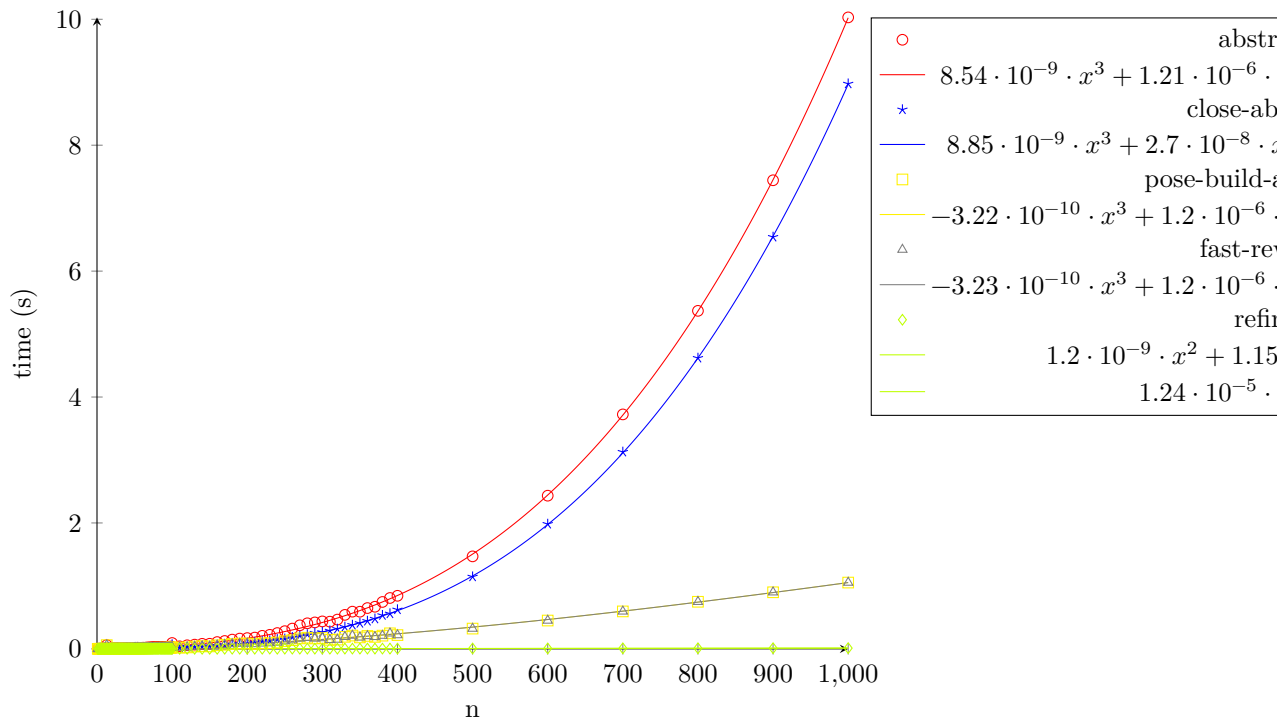Figure 10: timing-rewrite-repeated-app-rewrite-strat

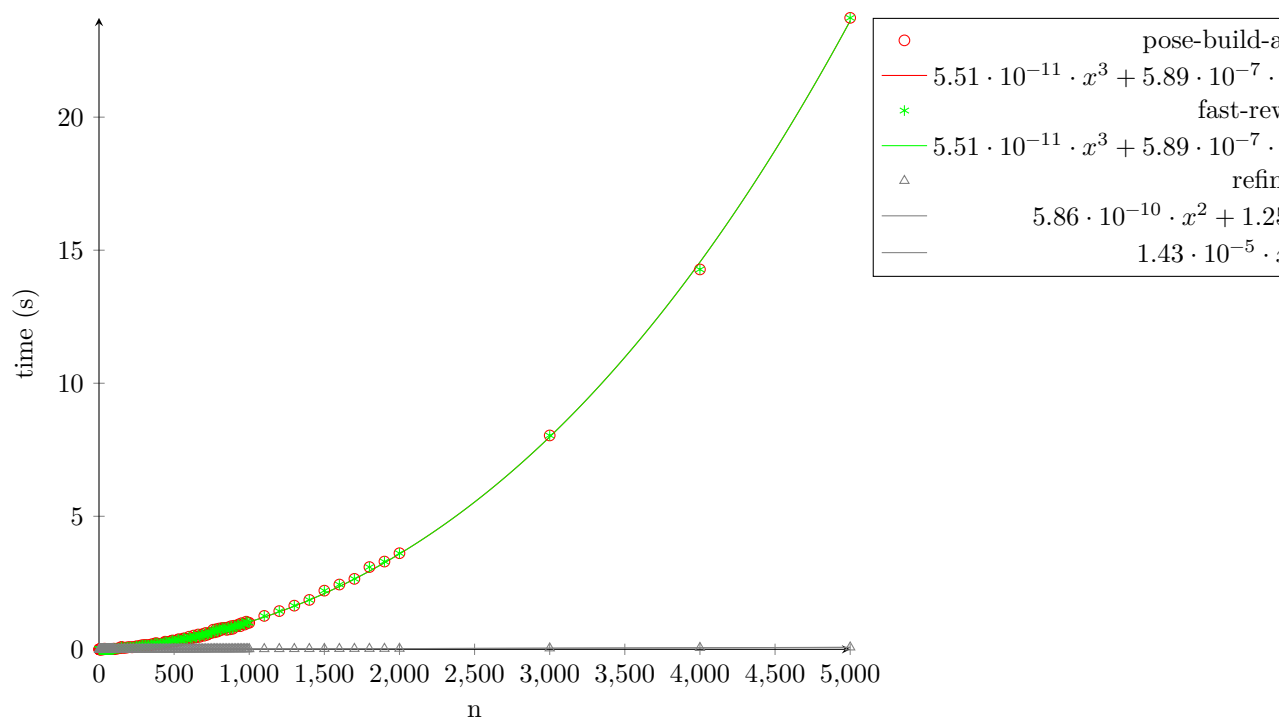Figure 11: timing-rewrite-repeated-app-fast-rewrite

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

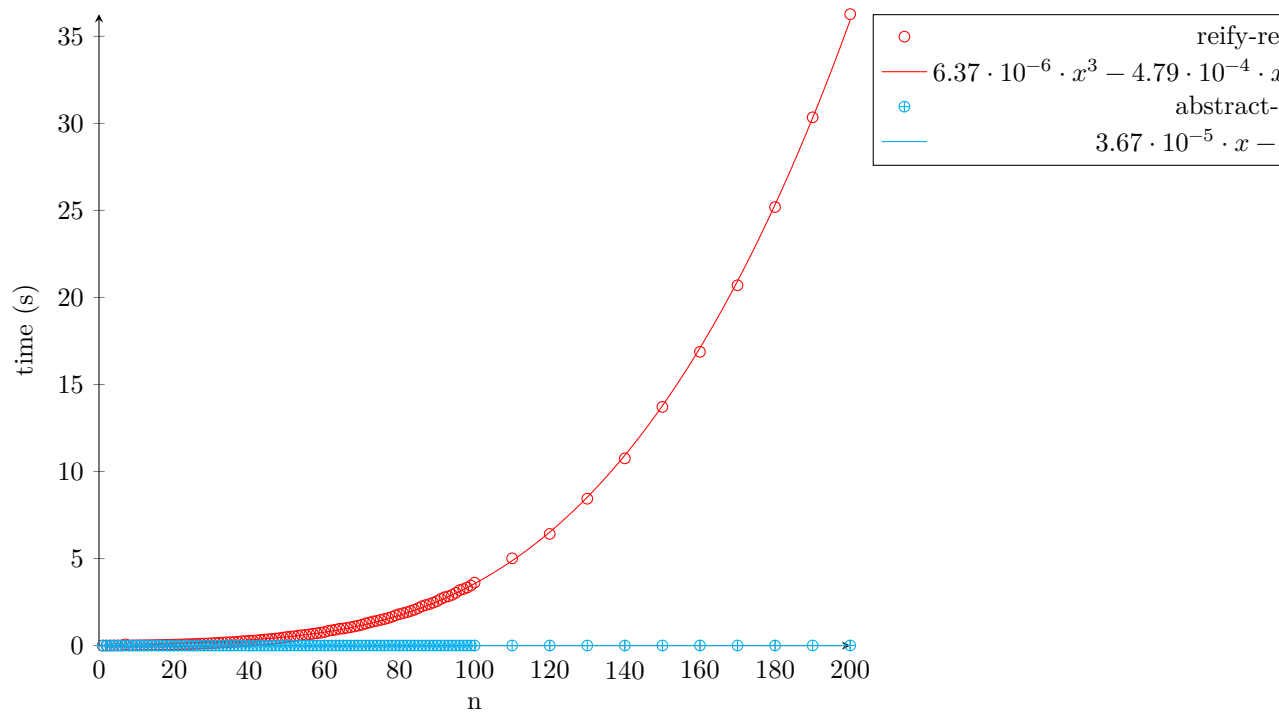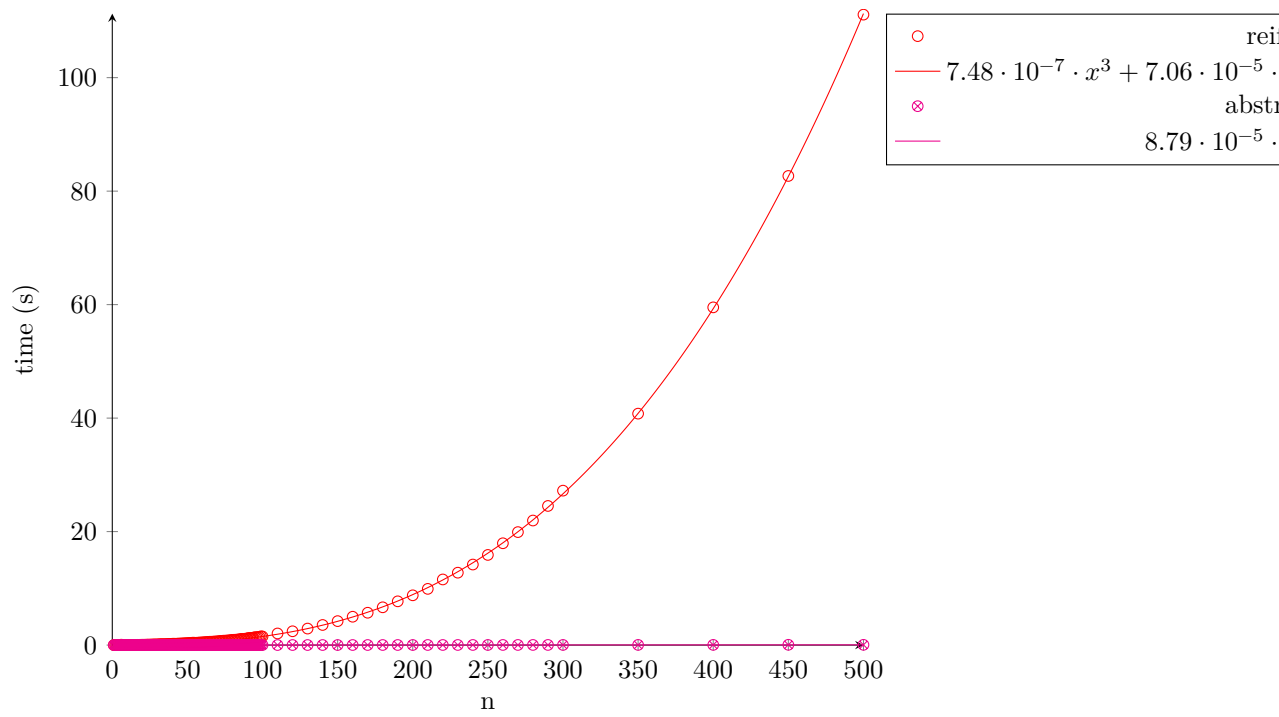Figure 13: timing-typeclass-reification-let-in-HOAS

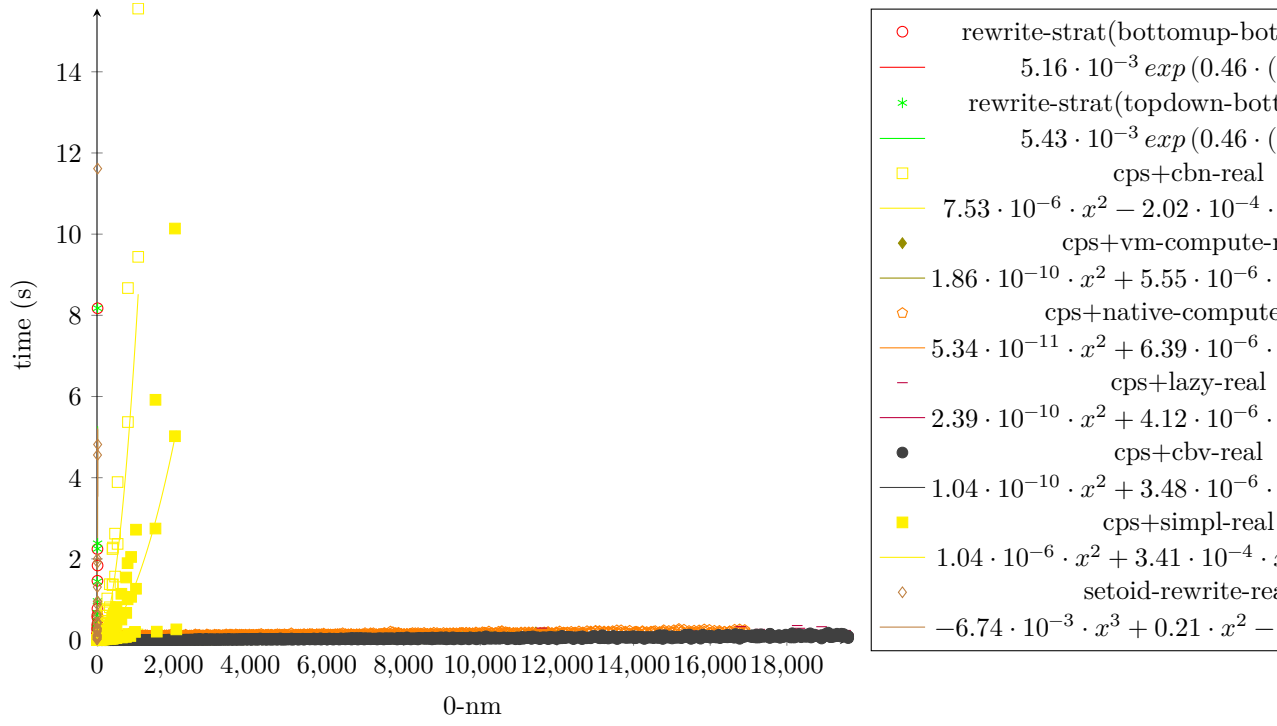Figure 14: timing-typeclass-reification-let-in-PHOAS

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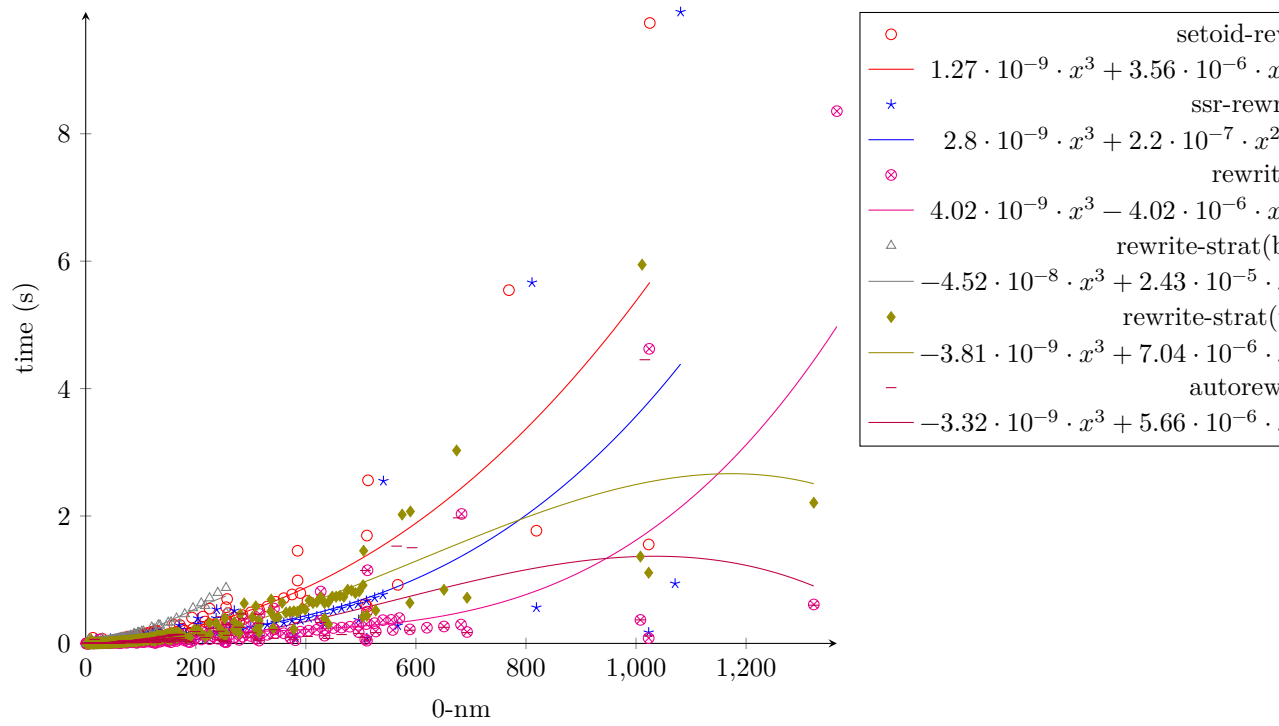
Figure 16: timing-rewrite-plus-0-tree param-1-n 0, param-2-m 1, param-3-input-size 5, param-4-output-size 3, param-5-num-rewrites 1
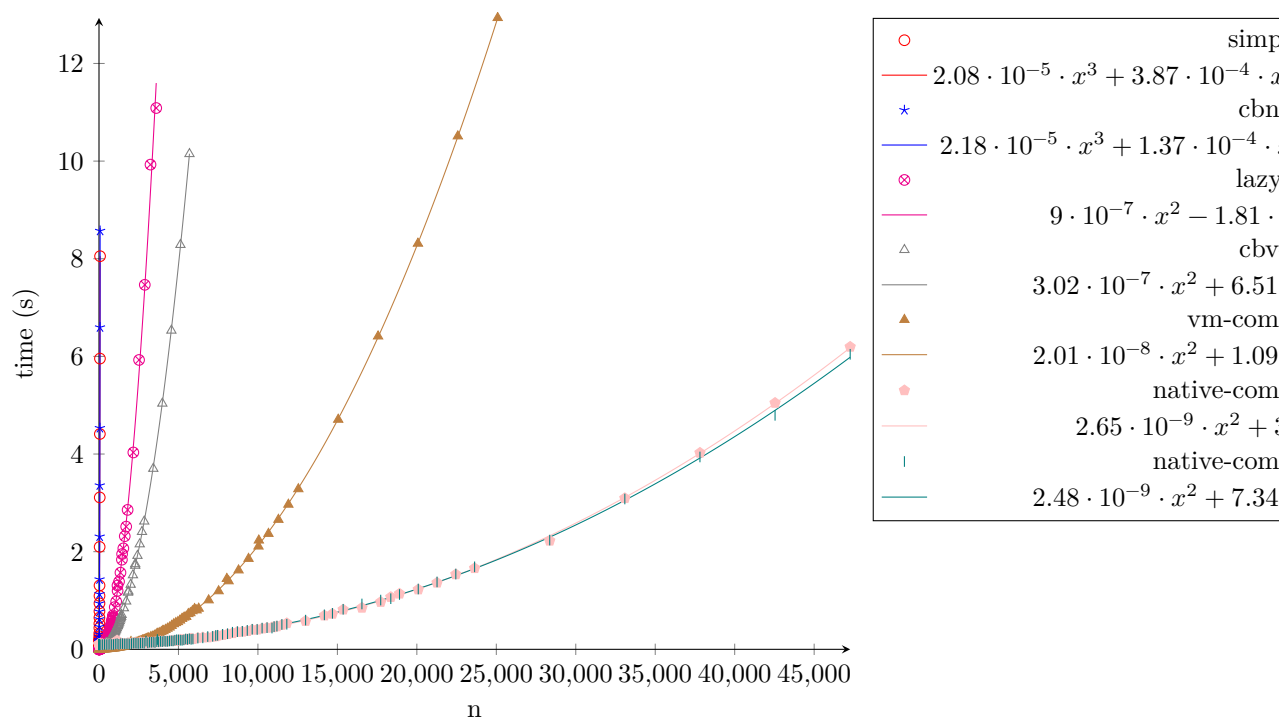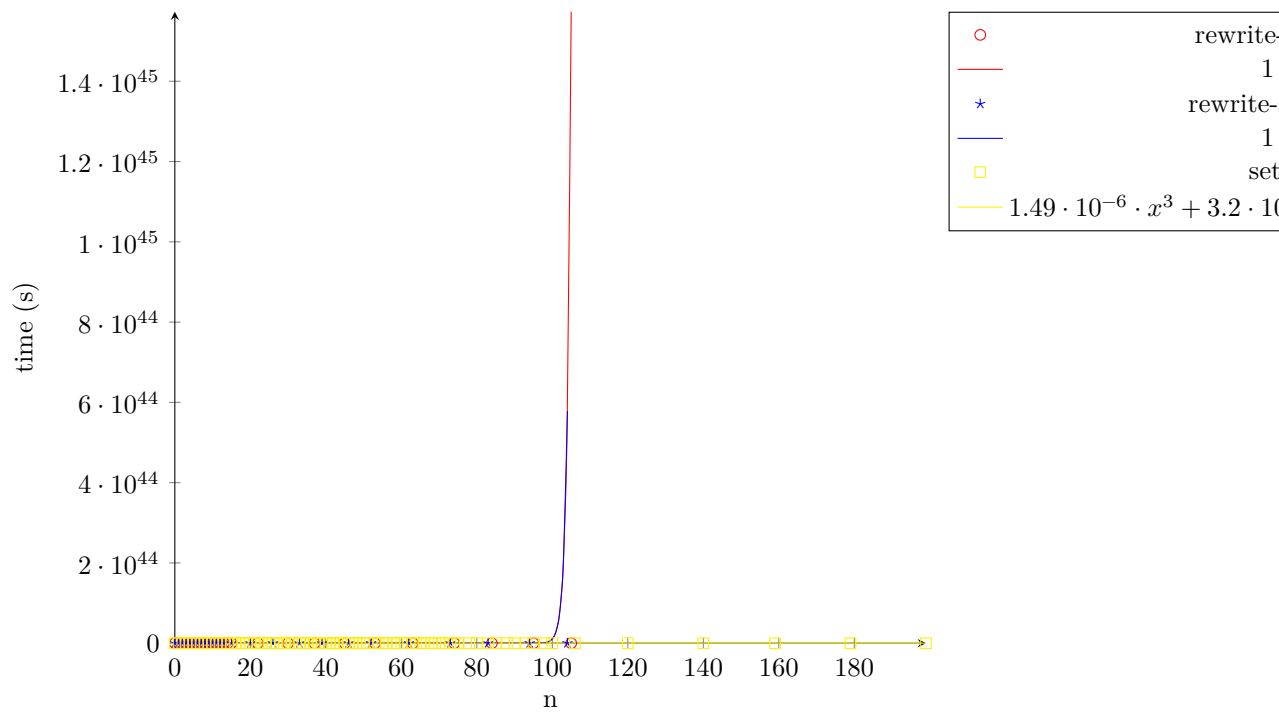
16

Figure 17: timing-sieve-of-eratosthenes

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

time (s)

n

abstract-real
$2.69 \cdot 10^{-6} \cdot x^2 - 1.59 \cdot 10^{-3}$

fast-rewrite-real
$2.41 \cdot 10^{-6} \cdot x^2 - 1.64 \cdot 10^{-3}$

close-abstract-real
$2.82 \cdot 10^{-7} \cdot x^2 + 4.29 \cdot 10^{-5} \cdot x$

check-admit-cast-real
$3.7 \cdot 10^{-7} \cdot x^2 - 3 \cdot 10^{-4} \cdot x +$

type-admit-real
$3.61 \cdot 10^{-7} \cdot x^2 - 2.72 \cdot 10^{-4} \cdot x$

refine-real
$3.08 \cdot 10^{-7} \cdot x^2 - 2.38 \cdot 10^{-4} \cdot x$

$4.02 \cdot 10^{-4} \cdot x - 4.72 \cdot$

type-admit-cast-real
$3.53 \cdot 10^{-7} \cdot x^2 - 2.64 \cdot 10^{-4} \cdot x$

check-admit-real
$3.55 \cdot 10^{-7} \cdot x^2 - 2.85 \cdot 10^{-4} \cdot x$

check-pf-cast-real
$3.3 \cdot 10^{-7} \cdot x^2 - 2.33 \cdot 10^{-4} \cdot x$

type-pf-cast-real
$3.29 \cdot 10^{-7} \cdot x^2 - 2.32 \cdot 10^{-4} \cdot x$

build-eval-thunk-real
$1.13 \cdot 10^{-4} \cdot x - 4.48 \cdot$

build-thunk-real
$1.12 \cdot 10^{-4} \cdot x - 4.47 \cdot$

check-I-real
$2 \cdot 10^{-5} \cdot x - 5.86 \cdot 1$

type-I-real
$1.93 \cdot 10^{-5} \cdot x - 6.13 \cdot$

build-I-real
$1.09 \cdot 10^{-5} \cdot x - 4.89 \cdot$

build-pf-cast-real
$1 \cdot 10^{-5} \cdot x - 5.02 \cdot 1$

build-admit-cast-real
$9.86 \cdot 10^{-6} \cdot x - 4.51 \cdot$

build-admit-real
$9.72 \cdot 10^{-6} \cdot x - 4.34 \cdot$
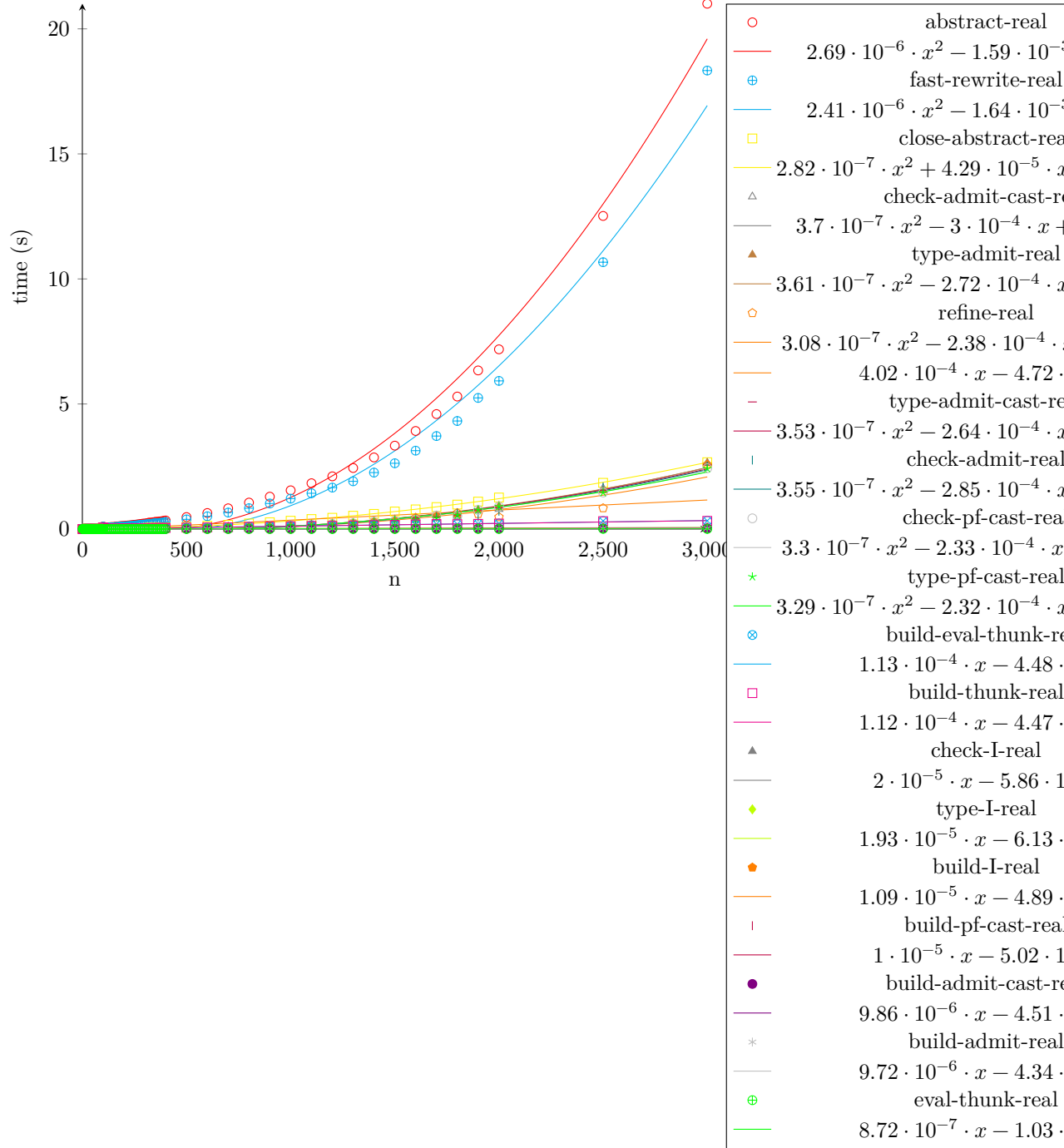
eval-thunk-real
$8.72 \cdot 10^{-7} \cdot x - 1.03 \cdot$

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