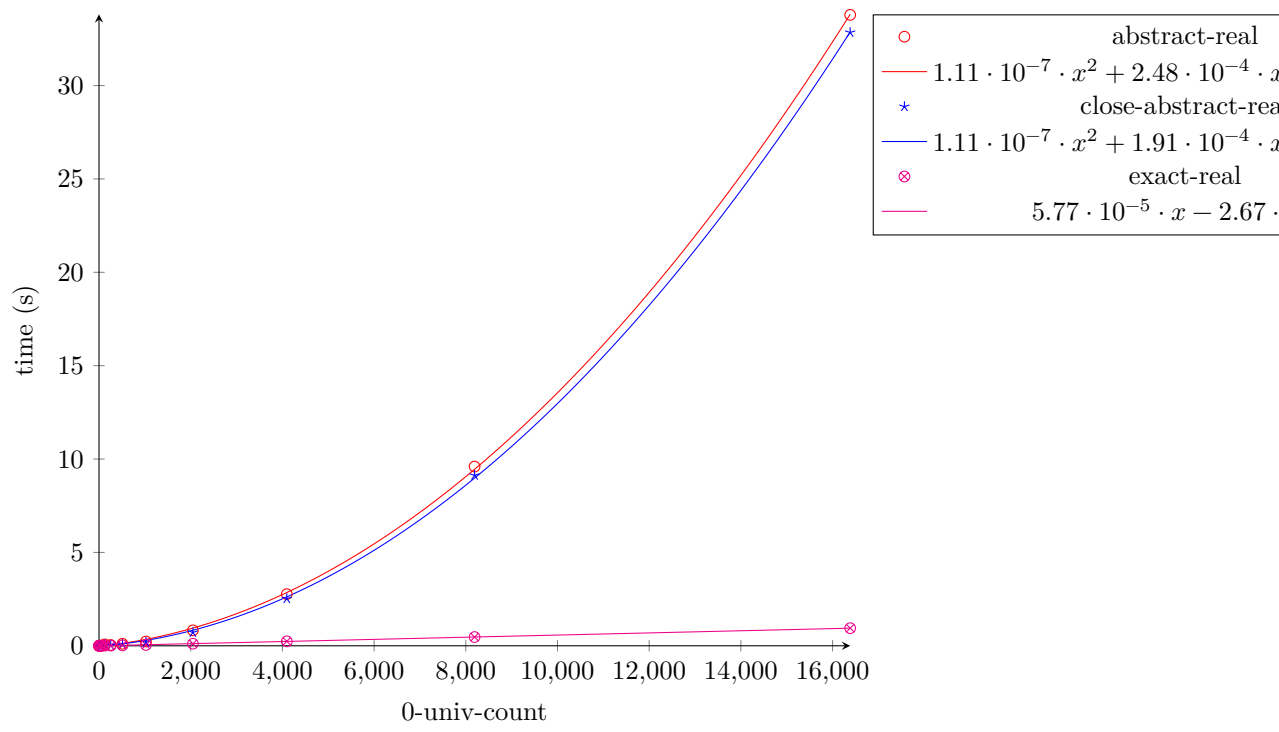Figure 1: timing-pattern

1

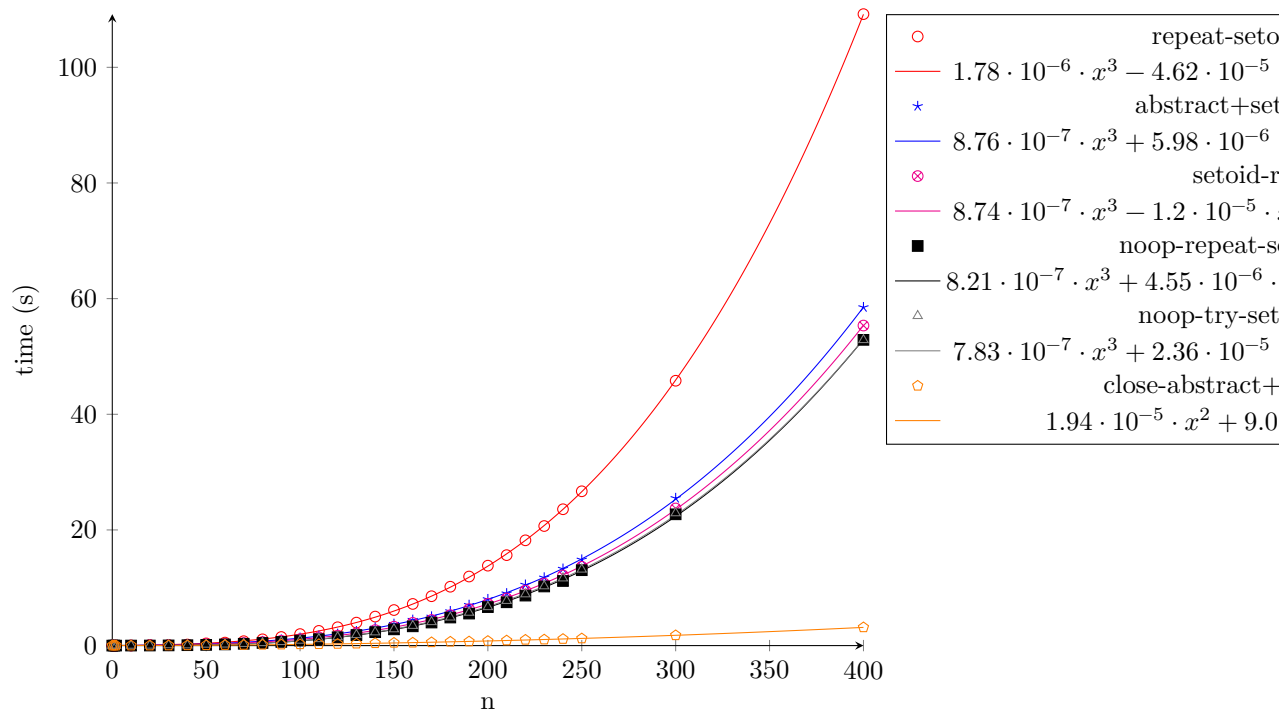Figure 2: timing-n-polymorphic-universes param-1-n 0

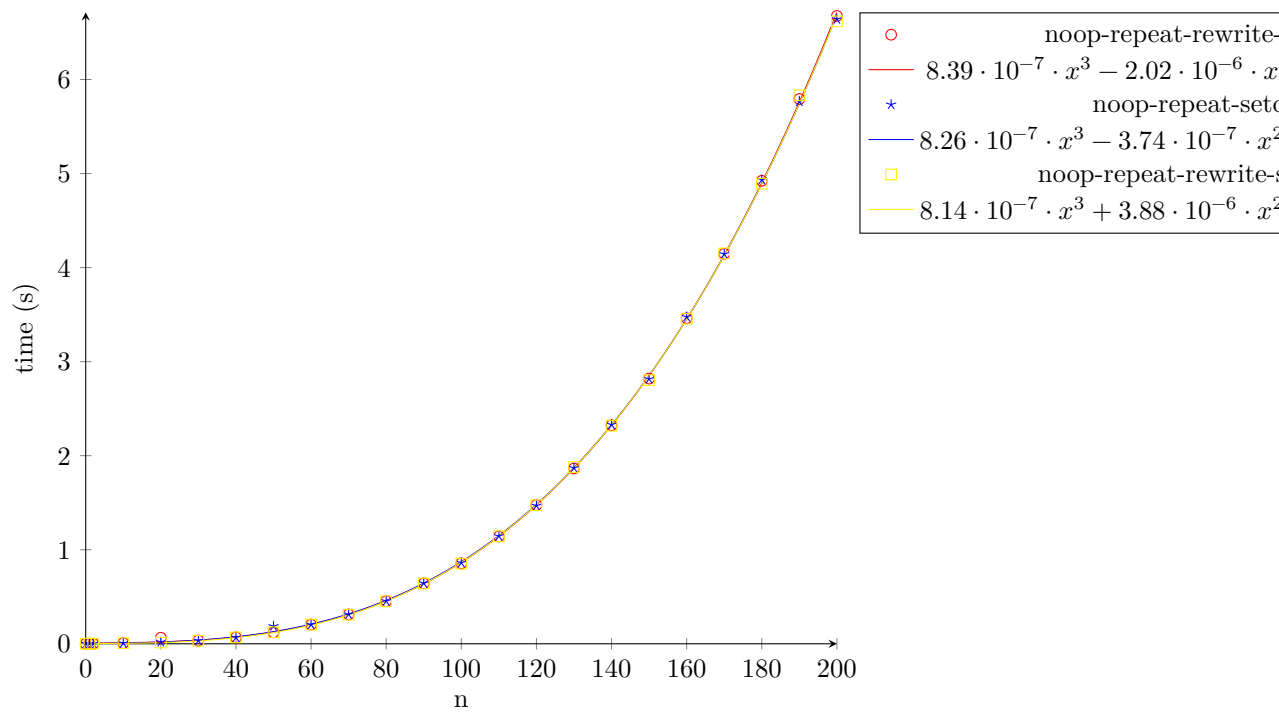Figure 3: timing-repeat-setoid-rewrite-under-binders

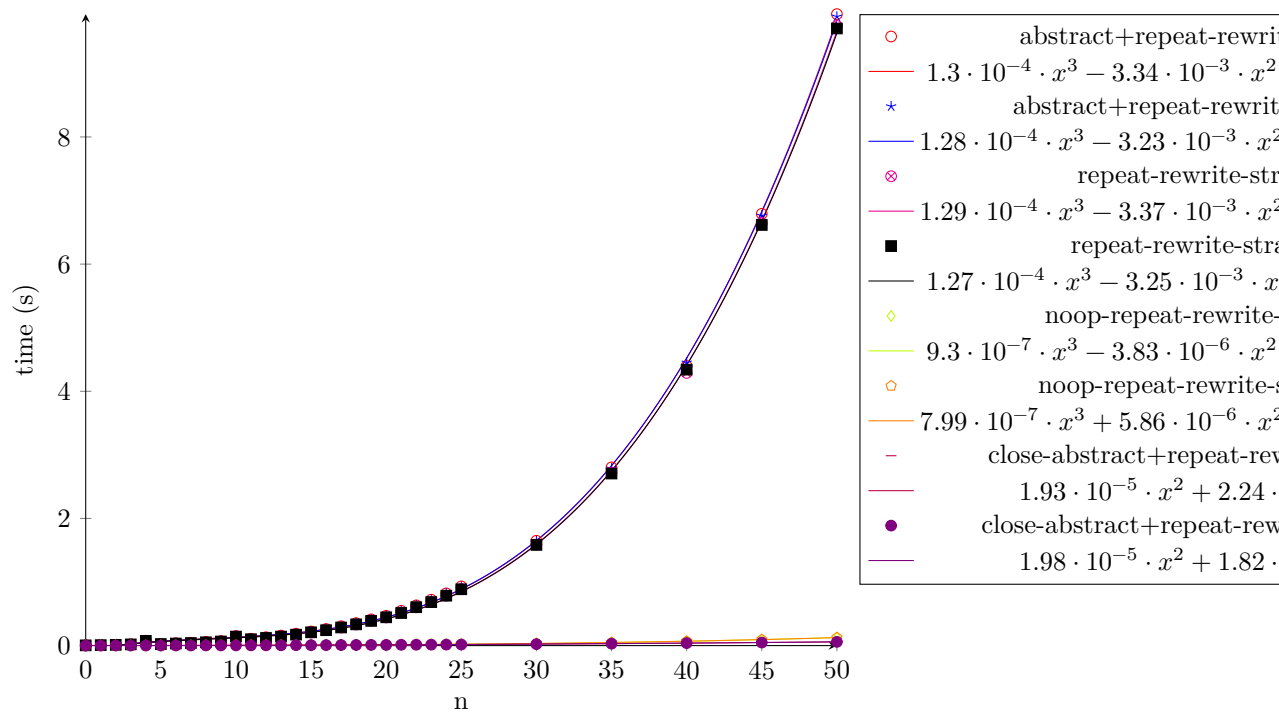Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

4

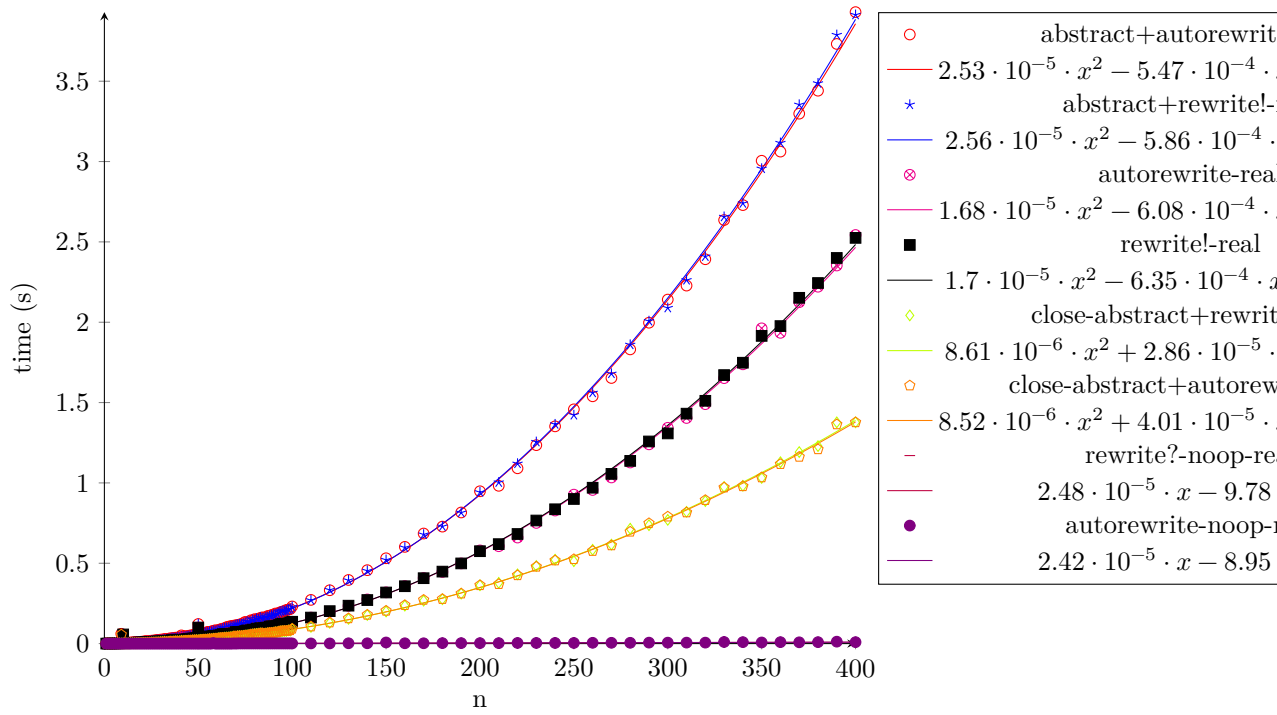Figure 5: timing-rewrite-strat-under-binders

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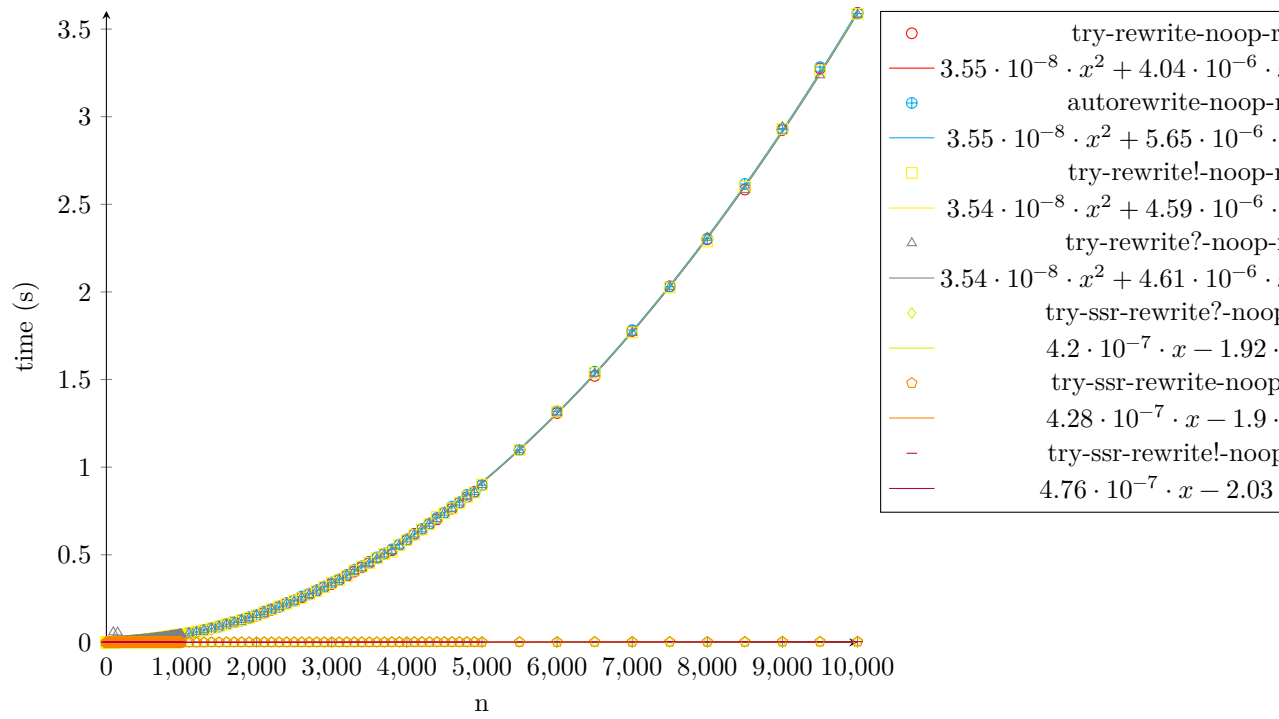
Figure 7: timing-rewrite-repeated-app-autorewrite-noop

Legend (partially cut off on right):

- try-rewrite-noop-n
- $3.55 \cdot 10^{-8} \cdot x^2 + 4.04 \cdot 10^{-6} \cdot x$
- autorewrite-noop-n
- $3.55 \cdot 10^{-8} \cdot x^2 + 5.65 \cdot 10^{-6} \cdot x$
- try-rewrite!-noop-n
- $3.54 \cdot 10^{-8} \cdot x^2 + 4.59 \cdot 10^{-6} \cdot x$
- try-rewrite?-noop-n
- $3.54 \cdot 10^{-8} \cdot x^2 + 4.61 \cdot 10^{-6} \cdot x$
- try-ssr-rewrite?-noop
- $4.2 \cdot 10^{-7} \cdot x - 1.92 \cdot x$
- try-ssr-rewrite-noop
- $4.28 \cdot 10^{-7} \cdot x - 1.9 \cdot x$
- try-ssr-rewrite!-noop
- $4.76 \cdot 10^{-7} \cdot x - 2.03 \cdot x$
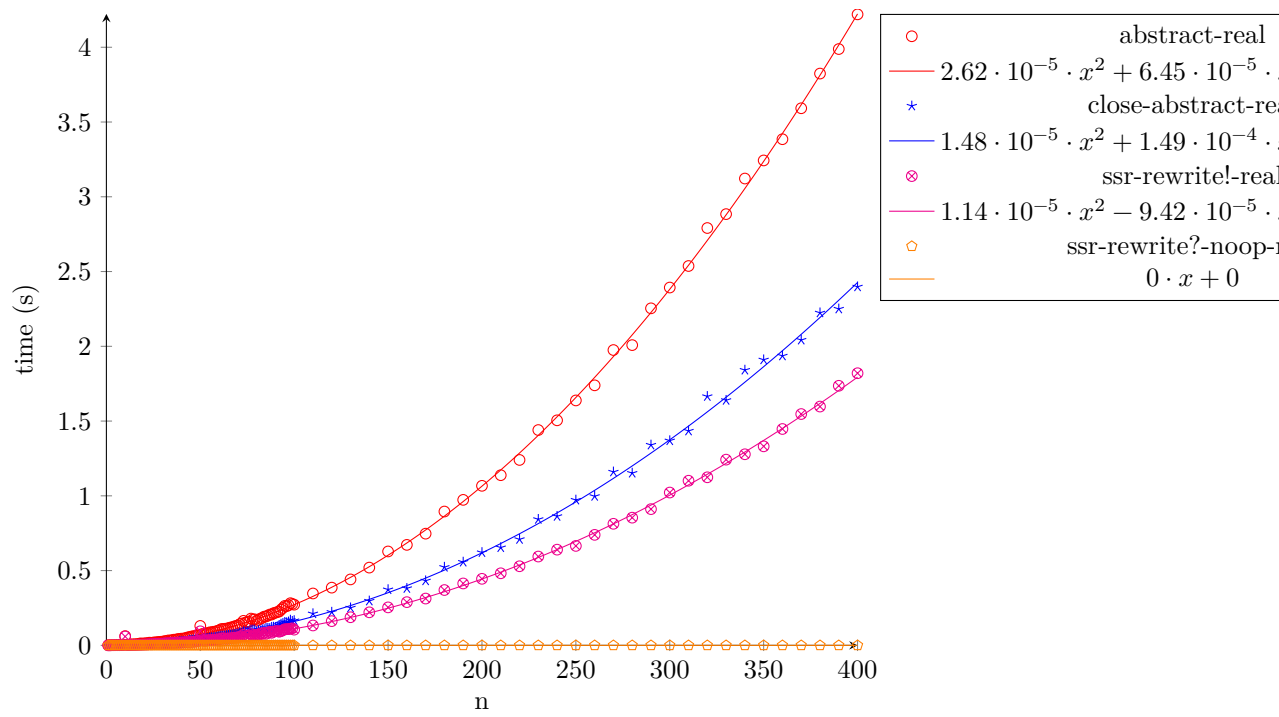
Figure 8: timing-rewrite-repeated-app-ssrrewrite
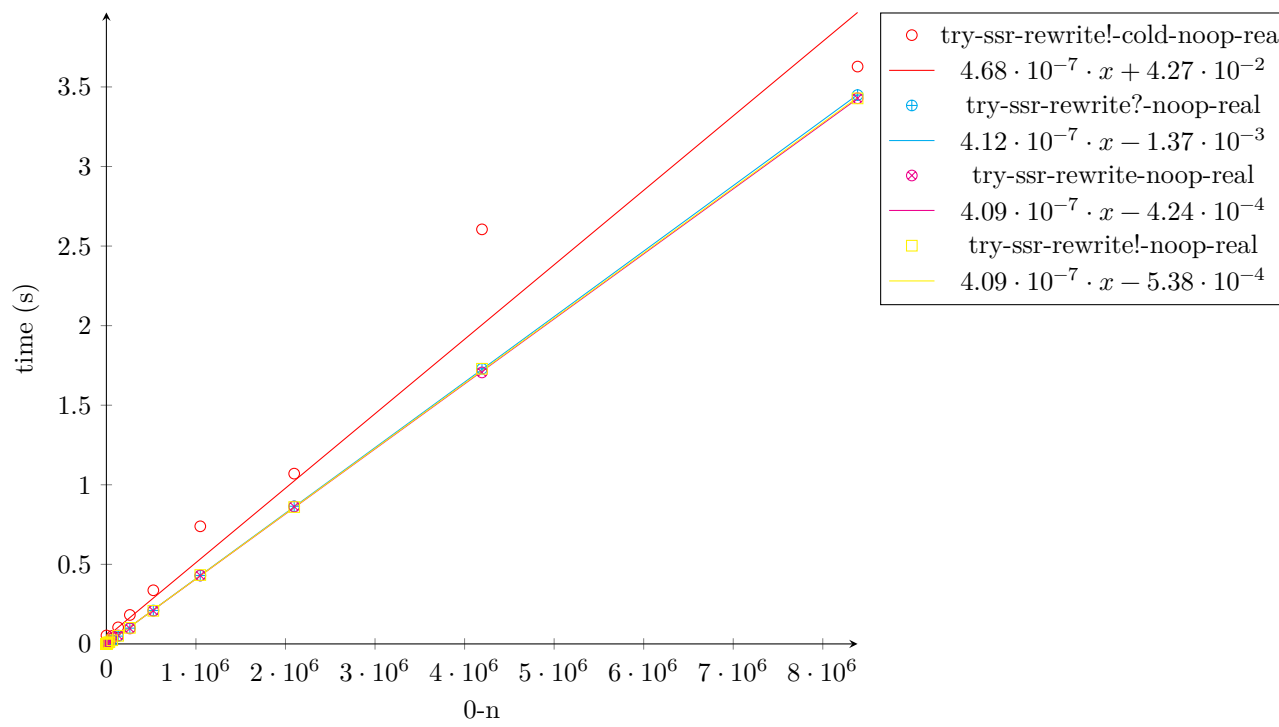
Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn   1
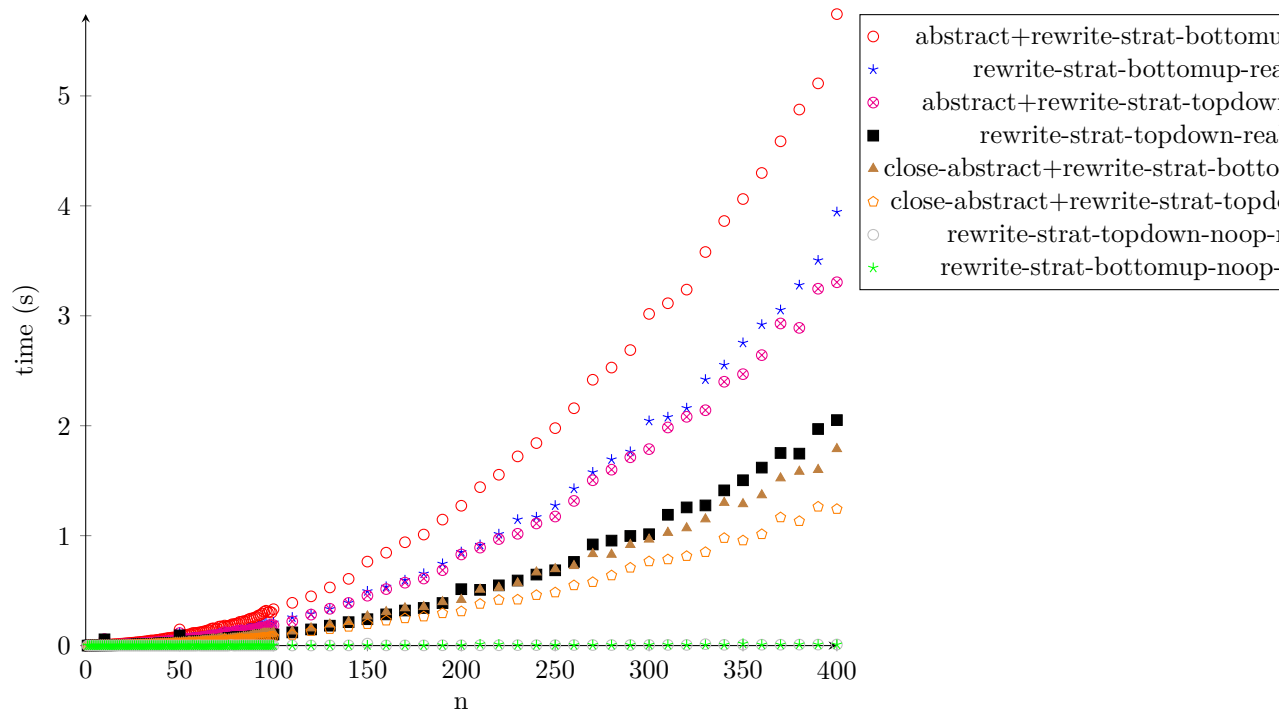
Figure 10: timing-rewrite-repeated-app-rewrite-strat

The legend in the figure 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-...
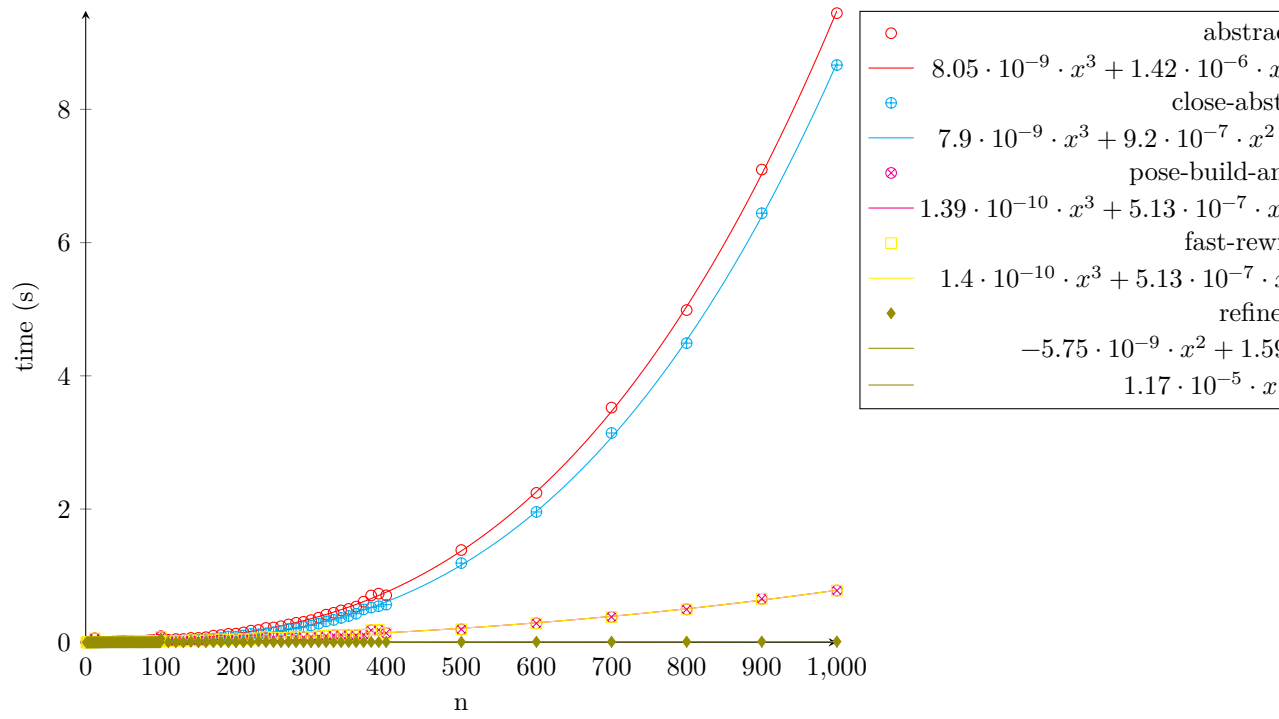- rewrite-strat-bottomup-noop-...

Figure 11: timing-rewrite-repeated-app-fast-rewrite
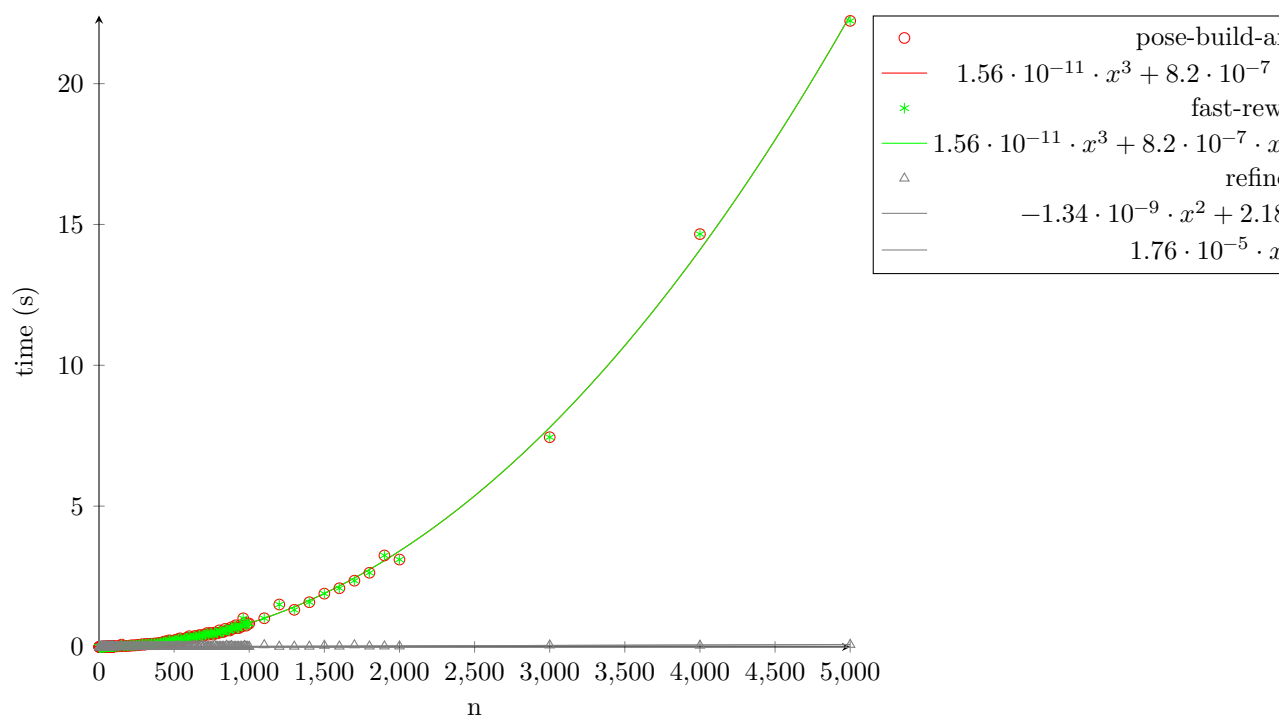
Figure 12: timing-rewrite-repeated-app-fast-rewrite-no-abstract
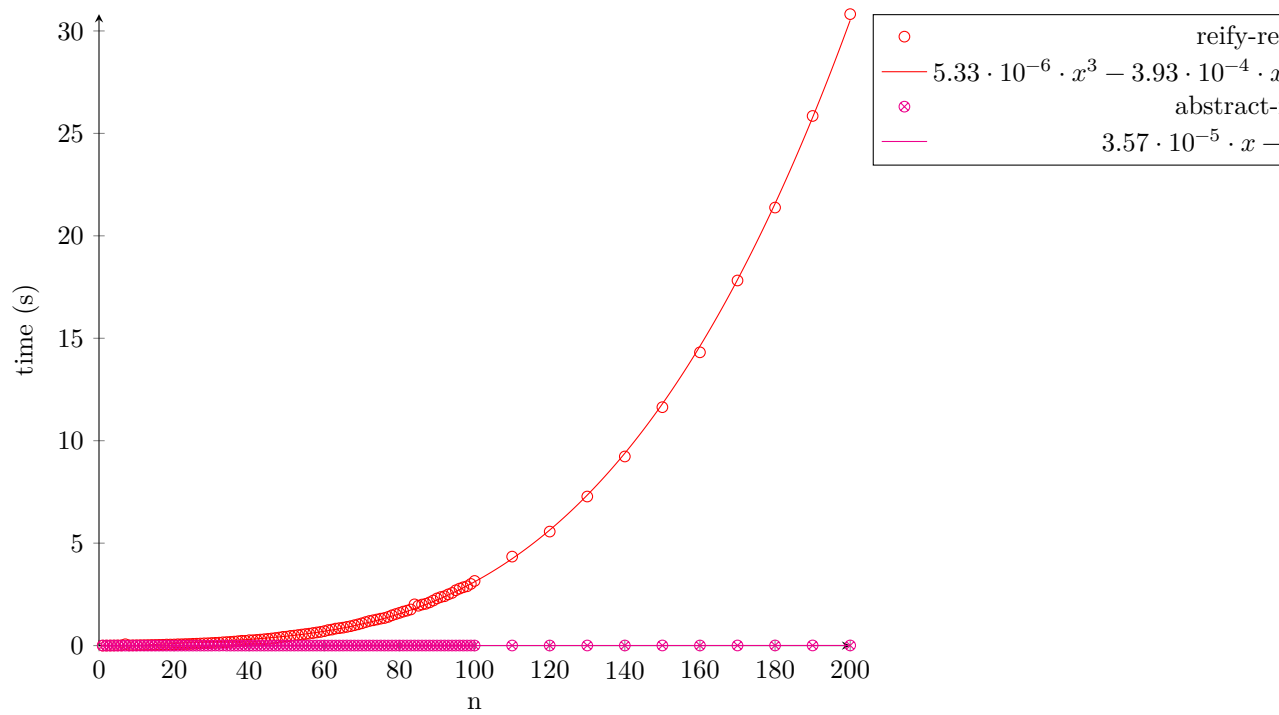
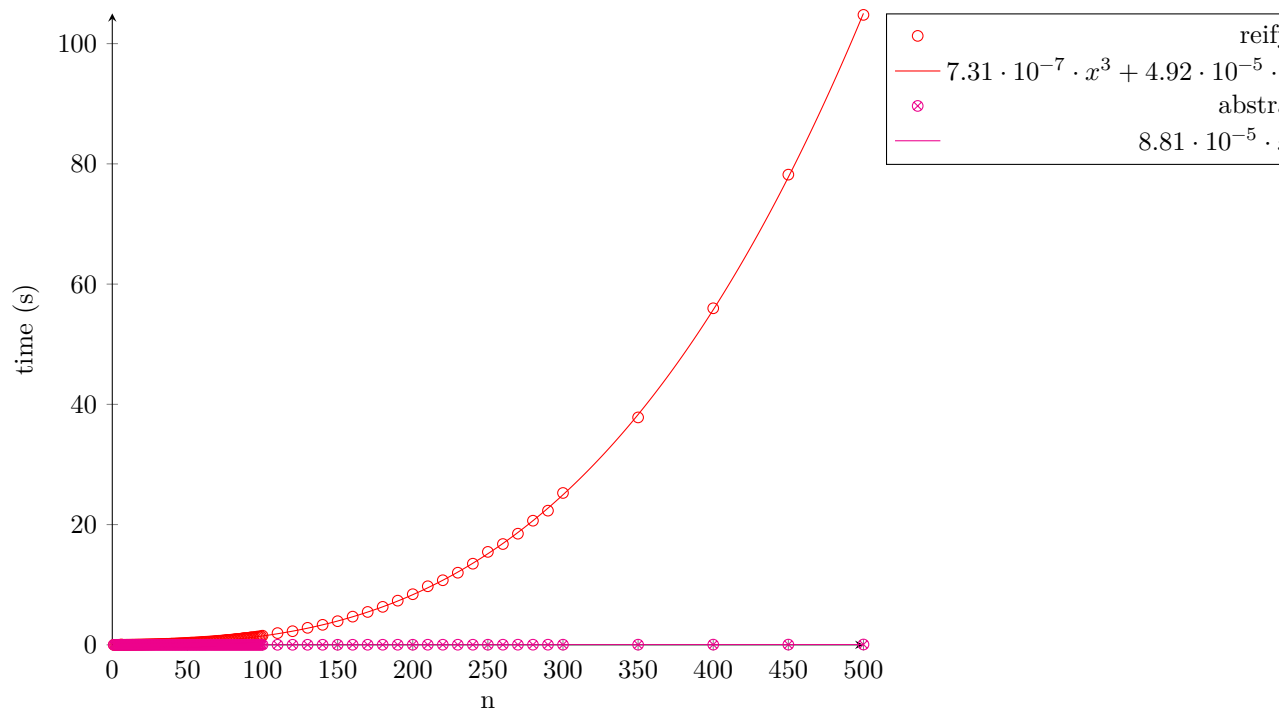Figure 13: timing-typeclass-reification-let-in-HOAS

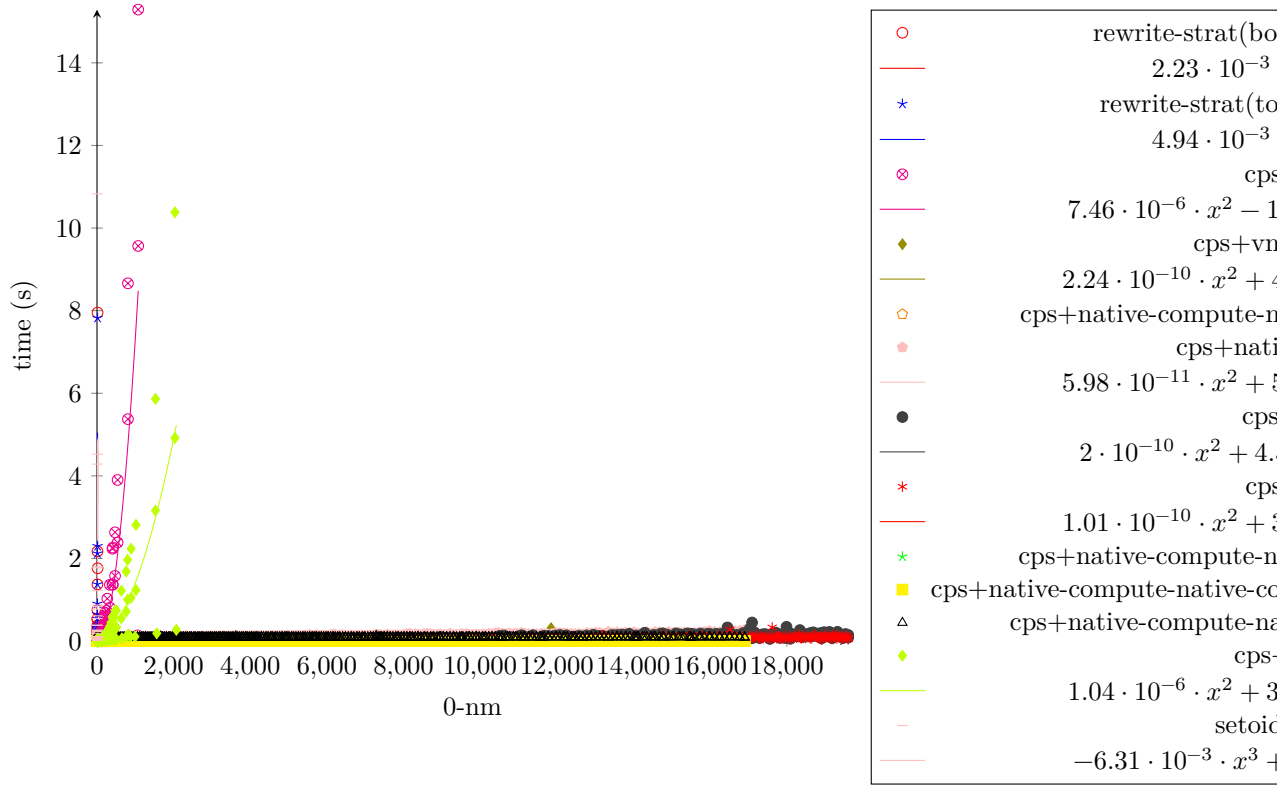Figure 14: timing-typeclass-reification-let-in-PHOAS

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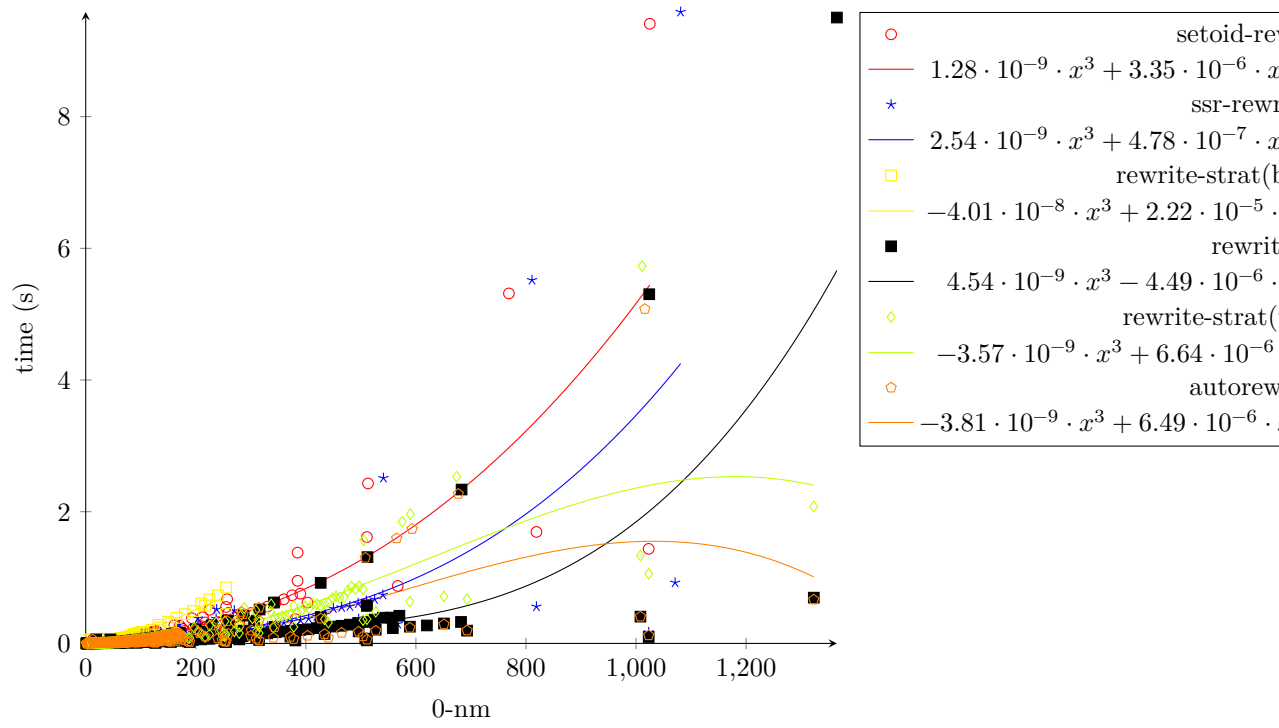
Figure 16: timing-rewrite-plus-0-tree param-1-n 0, param-2-m 1, param-3-input-size 5, param-4-output-size 3, param-5-num-rewrites 1
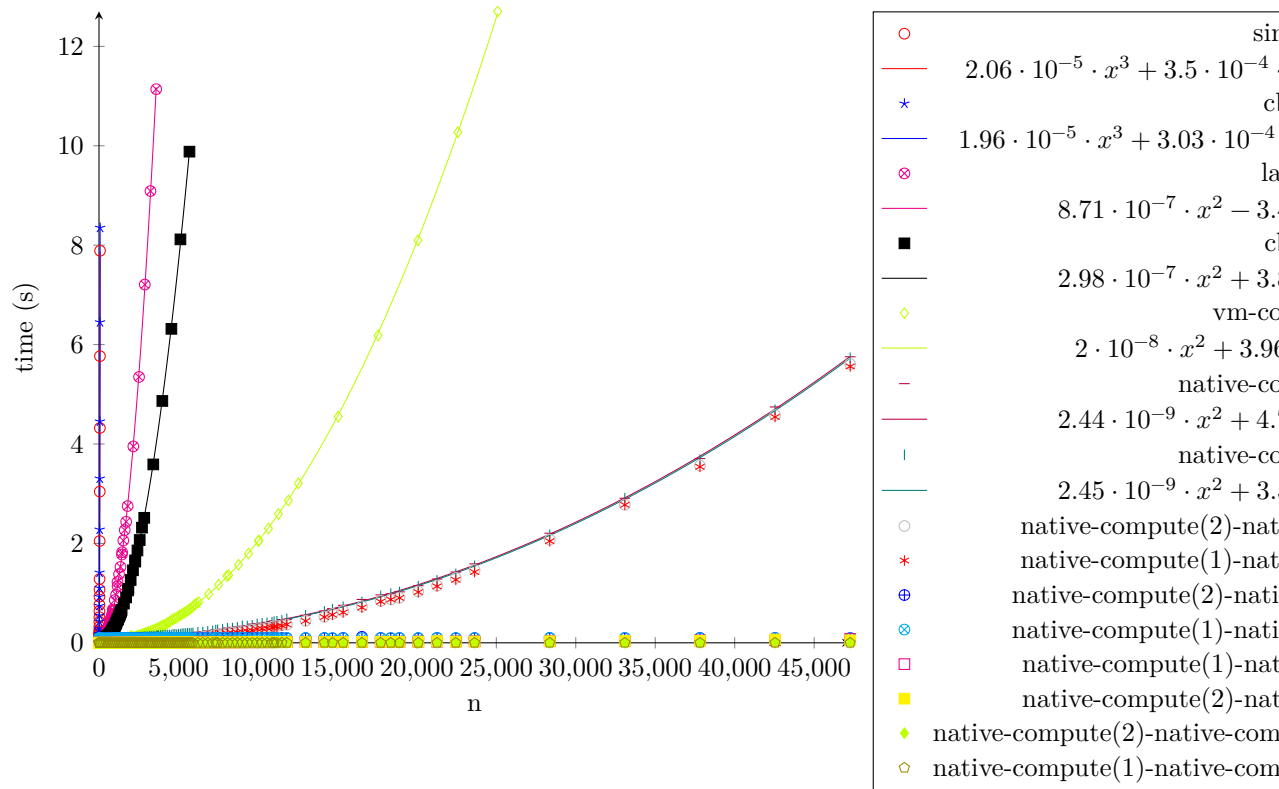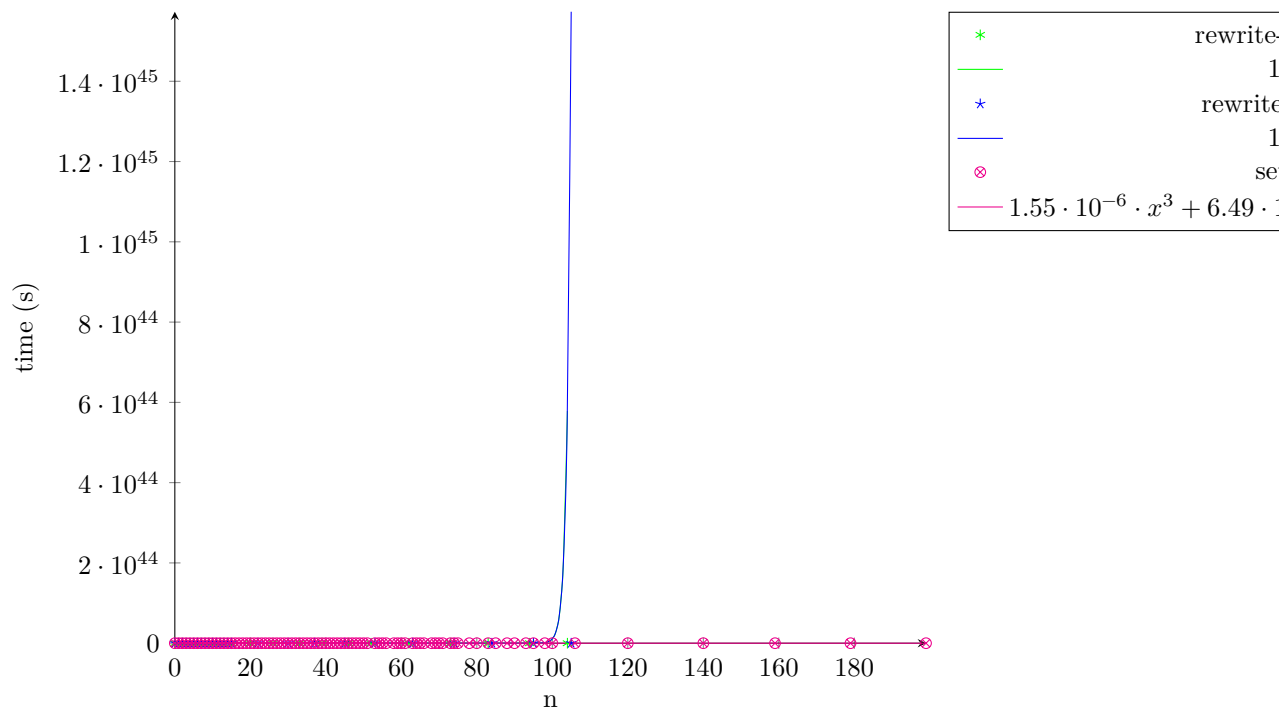
Figure 17: timing-sieve-of-eratosthenes

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

time (s)

18
16
14
12
10
8
6
4
2

0   500   1,000   1,500   2,000   2,500   3,000

n

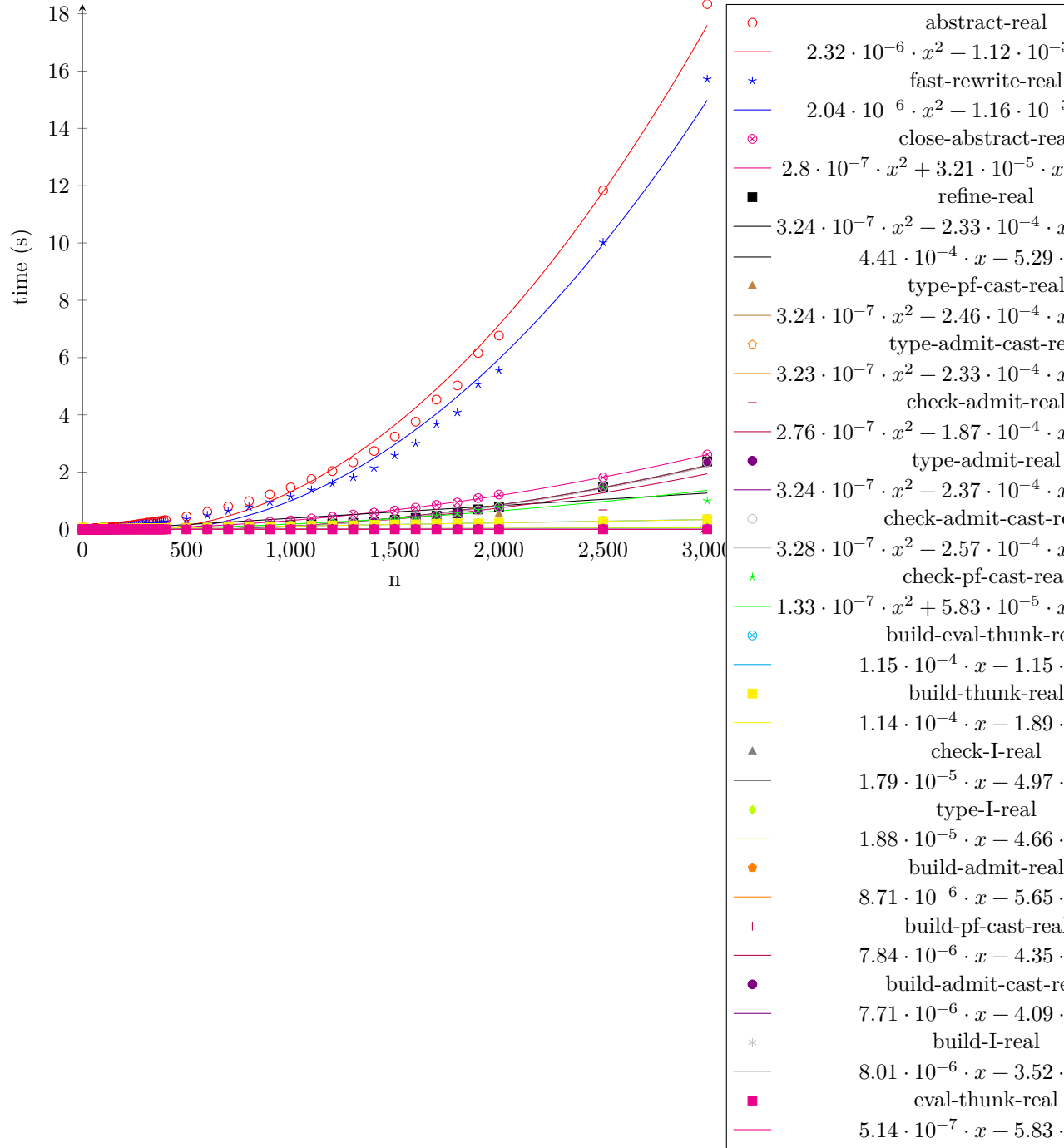| | abstract-real |
—	$2.32 \cdot 10^{-6} \cdot x^2 - 1.12 \cdot 10^{-3}$
	fast-rewrite-real
—	$2.04 \cdot 10^{-6} \cdot x^2 - 1.16 \cdot 10^{-3}$
	close-abstract-rea
—	$2.8 \cdot 10^{-7} \cdot x^2 + 3.21 \cdot 10^{-5} \cdot x$
	refine-real
—	$3.24 \cdot 10^{-7} \cdot x^2 - 2.33 \cdot 10^{-4} \cdot x$
—	$4.41 \cdot 10^{-4} \cdot x - 5.29 \cdot$
	type-pf-cast-real
—	$3.24 \cdot 10^{-7} \cdot x^2 - 2.46 \cdot 10^{-4} \cdot x$
	type-admit-cast-re
—	$3.23 \cdot 10^{-7} \cdot x^2 - 2.33 \cdot 10^{-4} \cdot x$
	check-admit-real
—	$2.76 \cdot 10^{-7} \cdot x^2 - 1.87 \cdot 10^{-4} \cdot x$
	type-admit-real
—	$3.24 \cdot 10^{-7} \cdot x^2 - 2.37 \cdot 10^{-4} \cdot x$
	check-admit-cast-re
—	$3.28 \cdot 10^{-7} \cdot x^2 - 2.57 \cdot 10^{-4} \cdot x$
	check-pf-cast-rea
—	$1.33 \cdot 10^{-7} \cdot x^2 + 5.83 \cdot 10^{-5} \cdot x$
	build-eval-thunk-re
—	$1.15 \cdot 10^{-4} \cdot x - 1.15 \cdot$
	build-thunk-real
—	$1.14 \cdot 10^{-4} \cdot x - 1.89 \cdot$
	check-I-real
—	$1.79 \cdot 10^{-5} \cdot x - 4.97 \cdot$
	type-I-real
—	$1.88 \cdot 10^{-5} \cdot x - 4.66 \cdot$
	build-admit-real
—	$8.71 \cdot 10^{-6} \cdot x - 5.65 \cdot$
	build-pf-cast-real
—	$7.84 \cdot 10^{-6} \cdot x - 4.35 \cdot$
	build-admit-cast-re
—	$7.71 \cdot 10^{-6} \cdot x - 4.09 \cdot$
	build-I-real
—	$8.01 \cdot 10^{-6} \cdot x - 3.52 \cdot$
	eval-thunk-real
—	$5.14 \cdot 10^{-7} \cdot x - 5.83 \cdot$

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

19