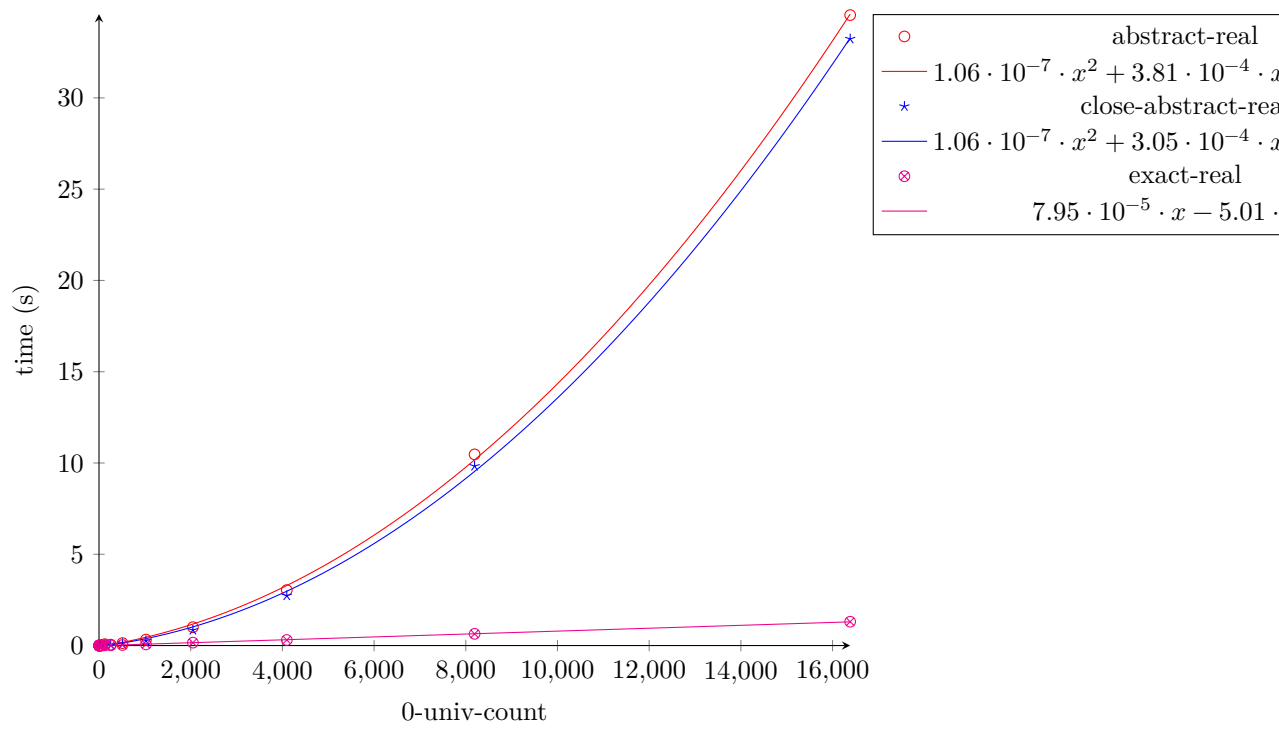Figure 1: timing-pattern

1

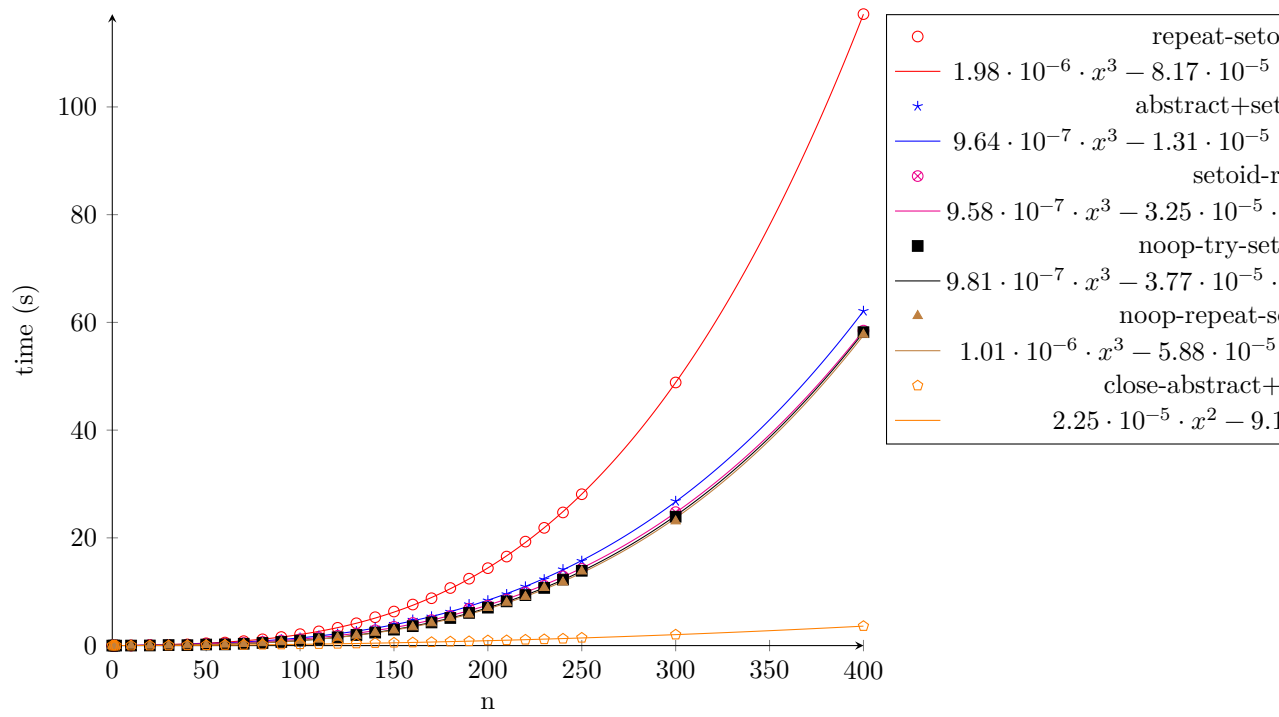Figure 2: timing-n-polymorphic-universes param-1-n 0

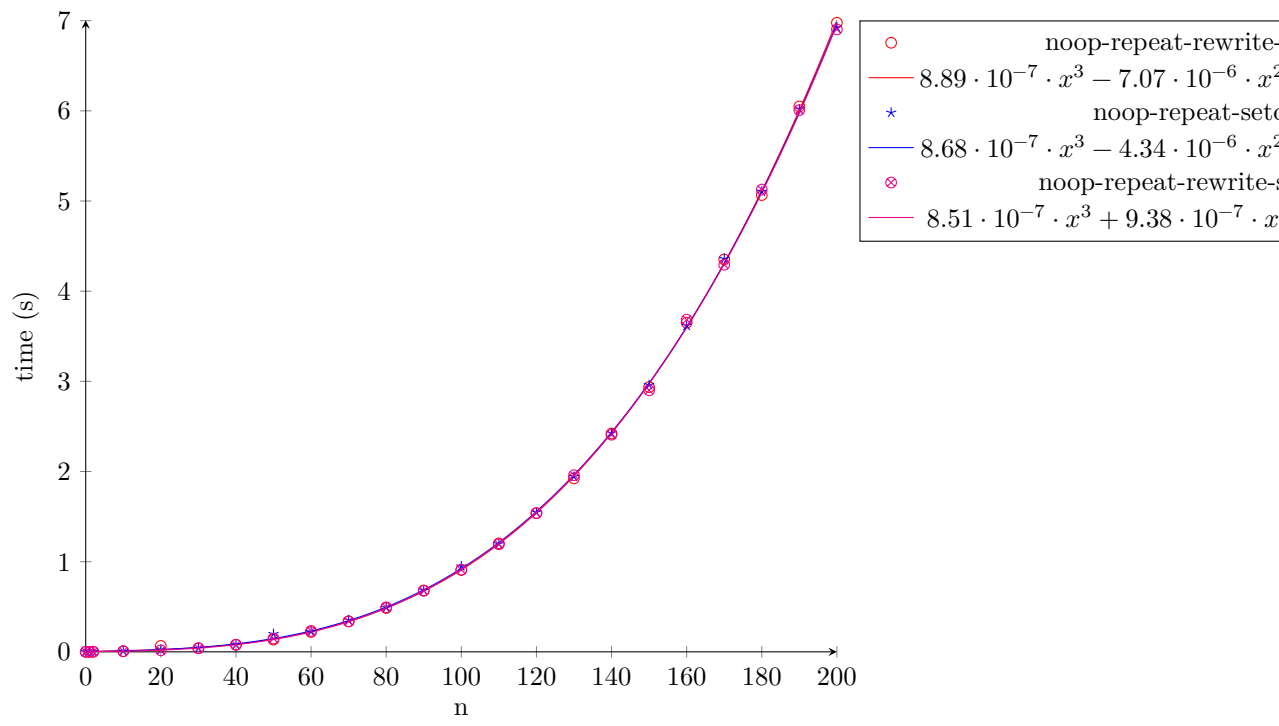Figure 3: timing-repeat-setoid-rewrite-under-binders

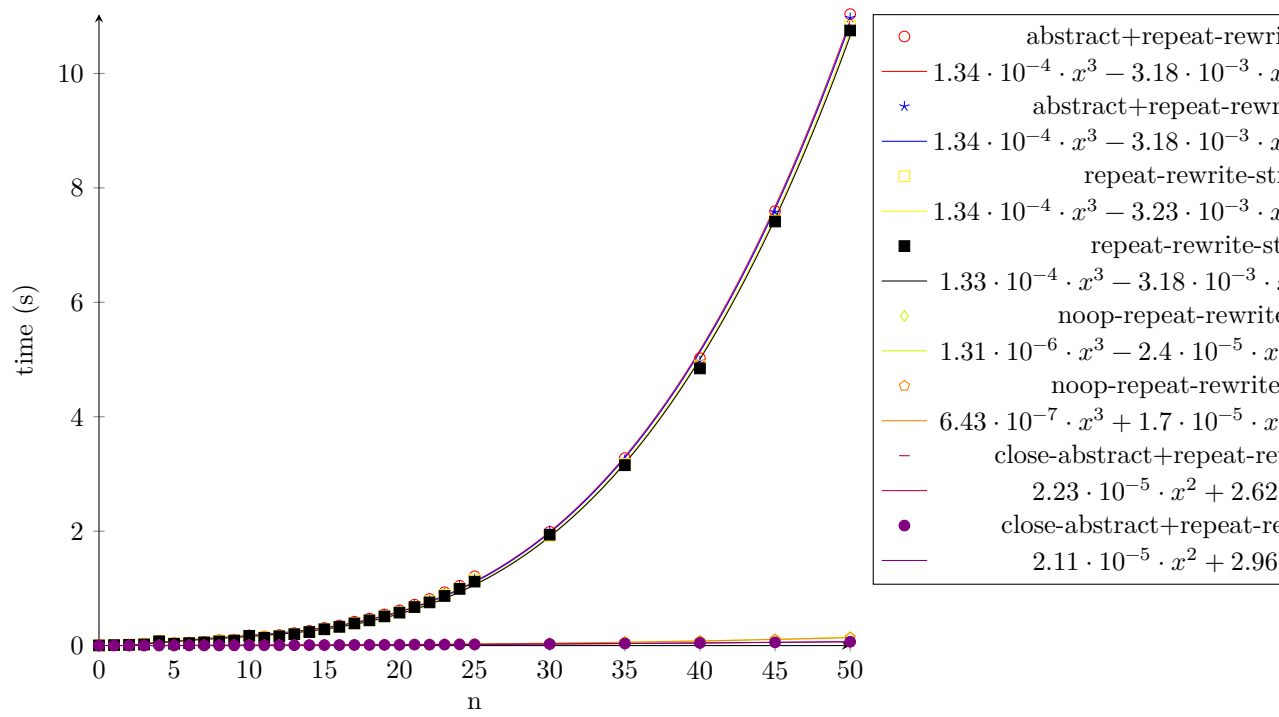Figure 4: timing-repeat-setoid-rewrite-under-binders-noop
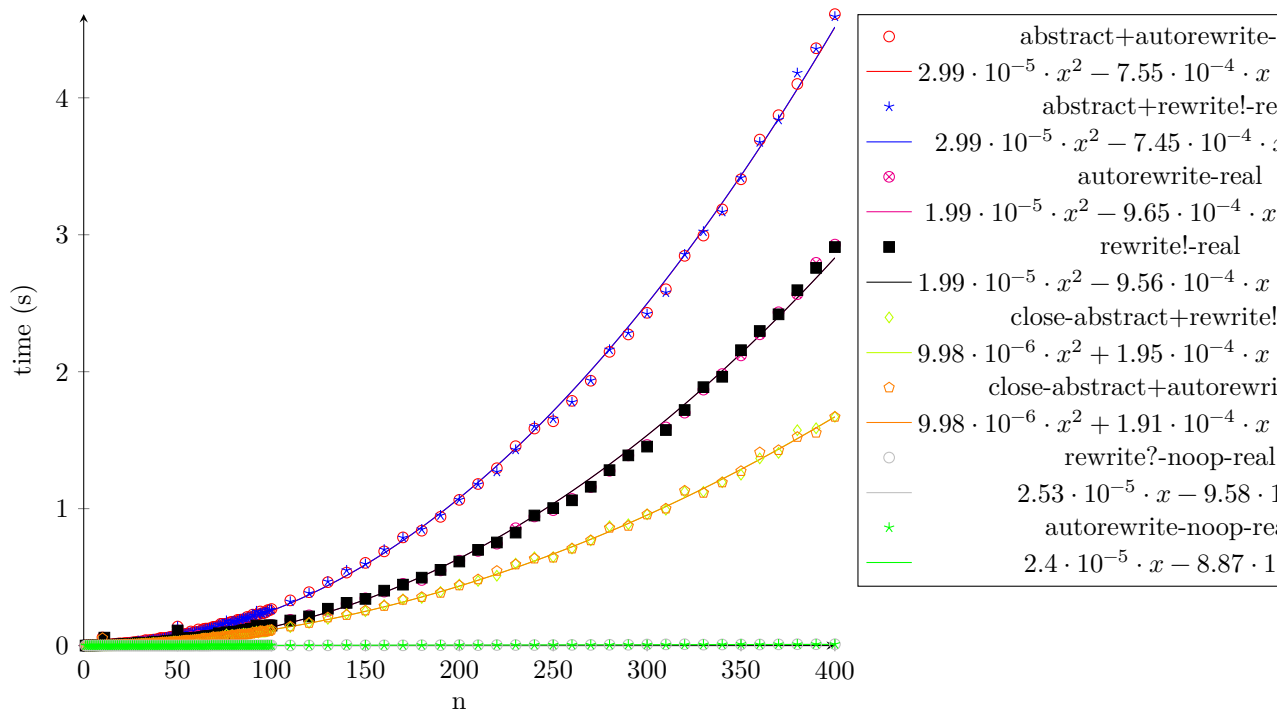
Figure 5: timing-rewrite-strat-under-binders
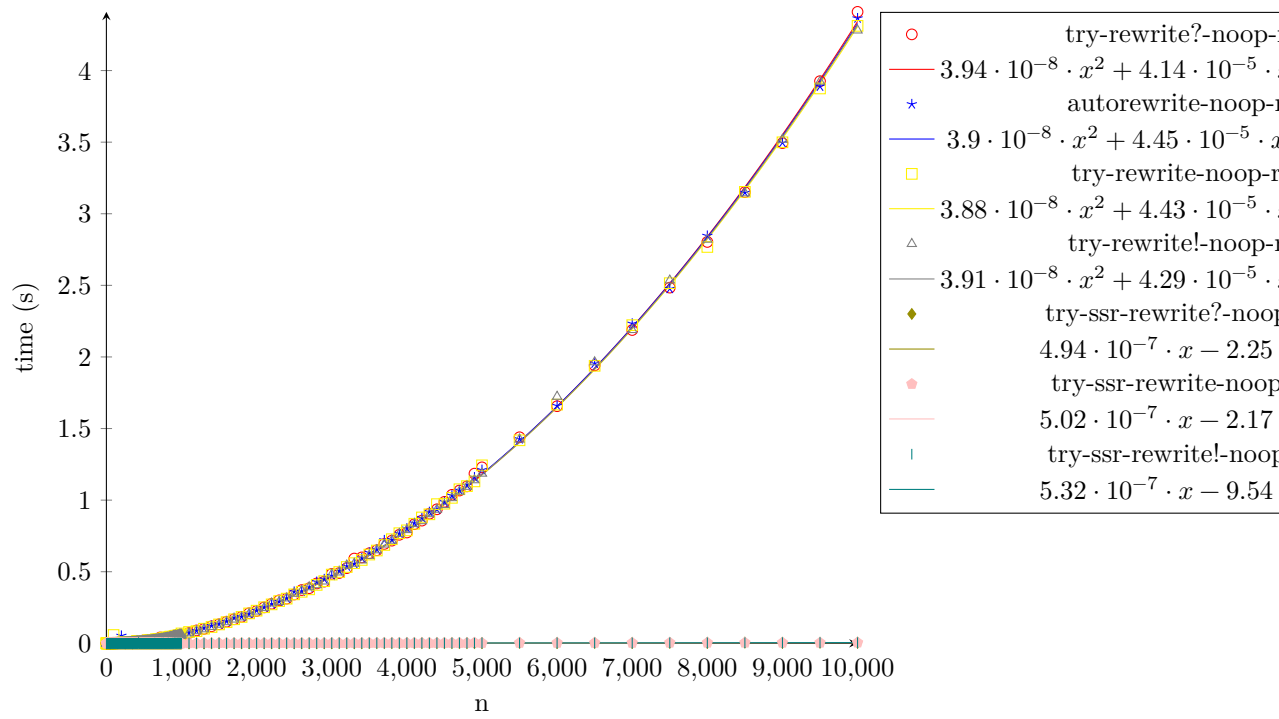
Figure 6: timing-rewrite-repeated-app-autorewrite

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

The legend in the figure reads:

- ○ try-rewrite?-noop-
- $3.94 \cdot 10^{-8} \cdot x^2 + 4.14 \cdot 10^{-5} \cdot x$
- ✳ autorewrite-noop-
- $3.9 \cdot 10^{-8} \cdot x^2 + 4.45 \cdot 10^{-5} \cdot x$
- □ try-rewrite-noop-
- $3.88 \cdot 10^{-8} \cdot x^2 + 4.43 \cdot 10^{-5} \cdot x$
- △ try-rewrite!-noop-
- $3.91 \cdot 10^{-8} \cdot x^2 + 4.29 \cdot 10^{-5} \cdot x$
- ◆ try-ssr-rewrite?-noop
- $4.94 \cdot 10^{-7} \cdot x - 2.25$
- ⬠ try-ssr-rewrite-noop
- $5.02 \cdot 10^{-7} \cdot x - 2.17$
- | try-ssr-rewrite!-noop
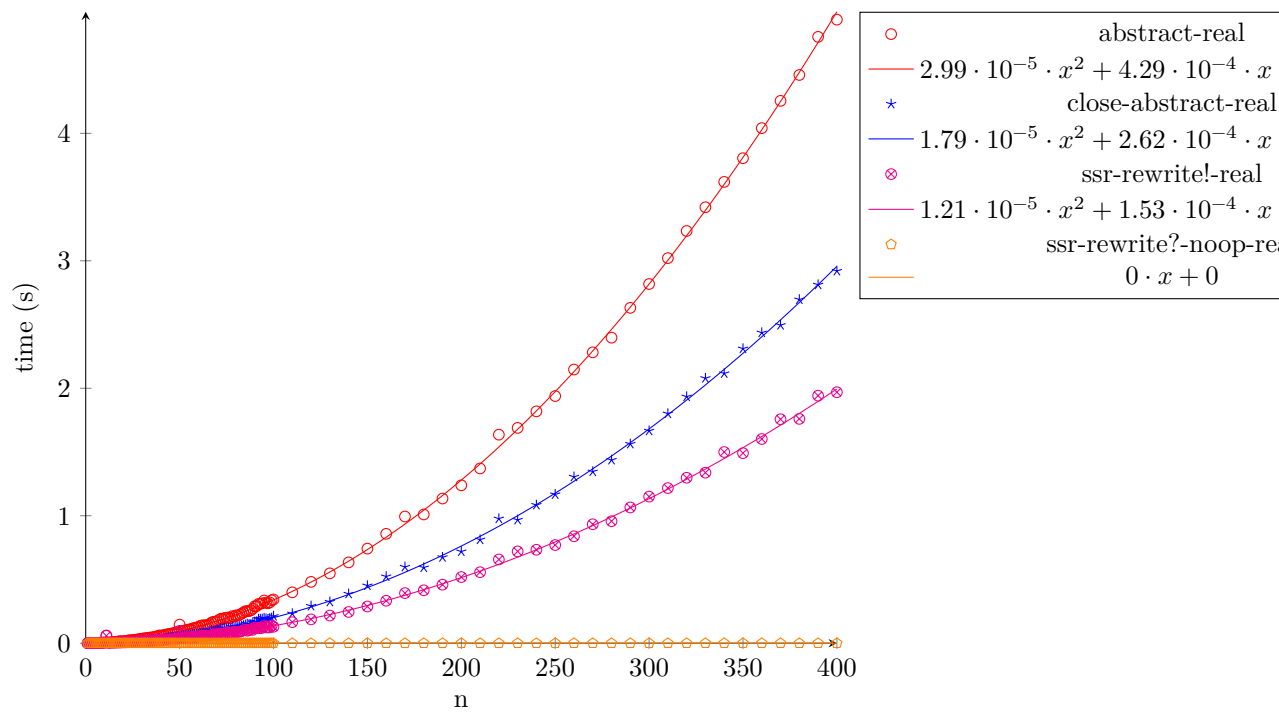- $5.32 \cdot 10^{-7} \cdot x - 9.54$

7

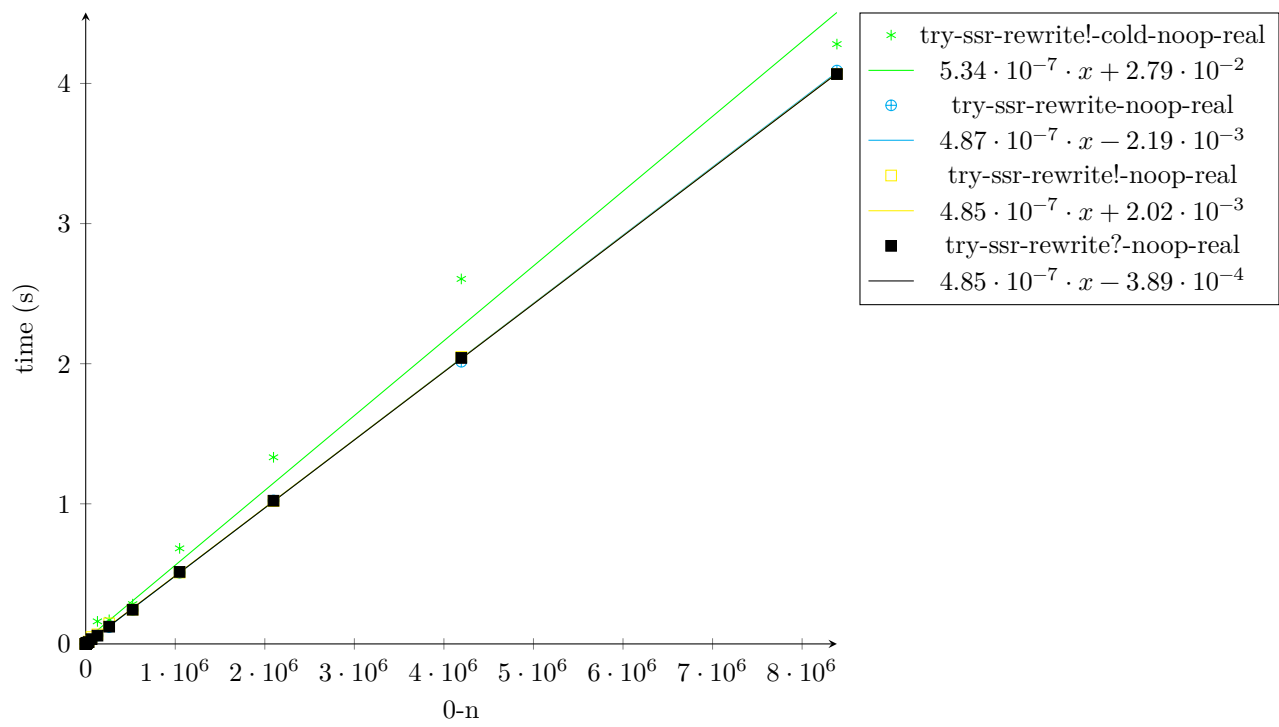Figure 8: timing-rewrite-repeated-app-ssrrewrite

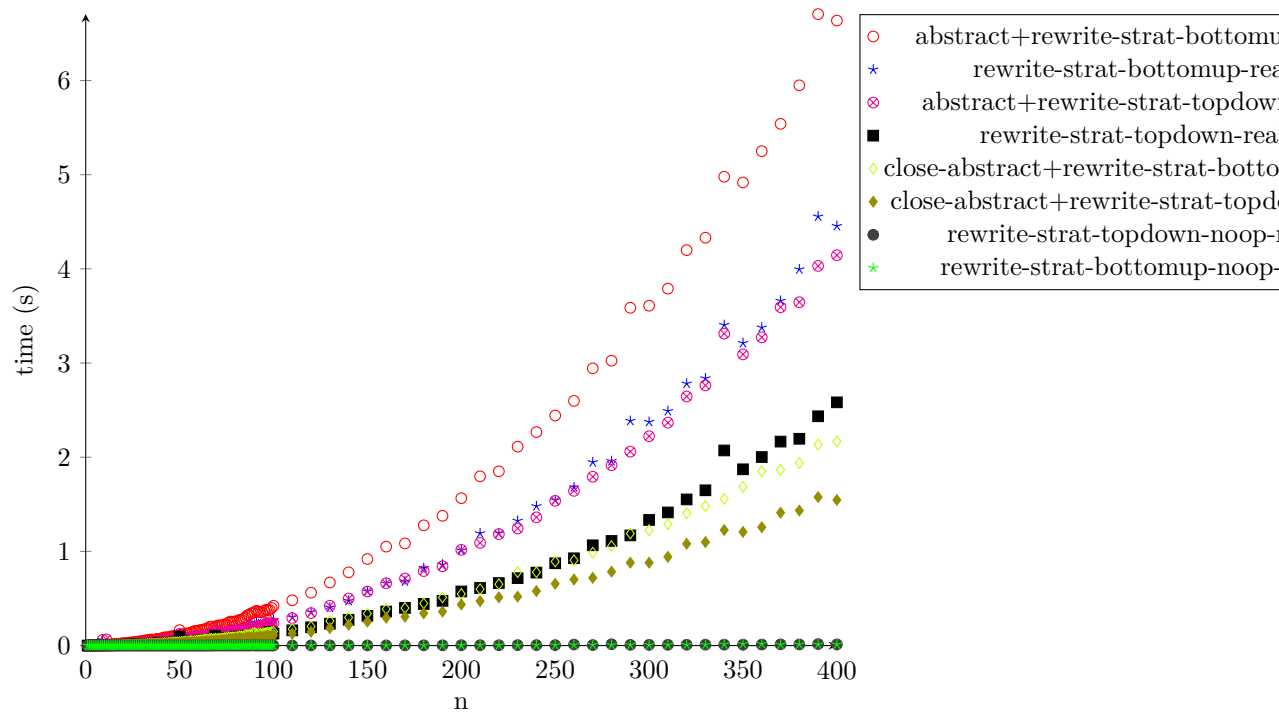Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn 1

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

10
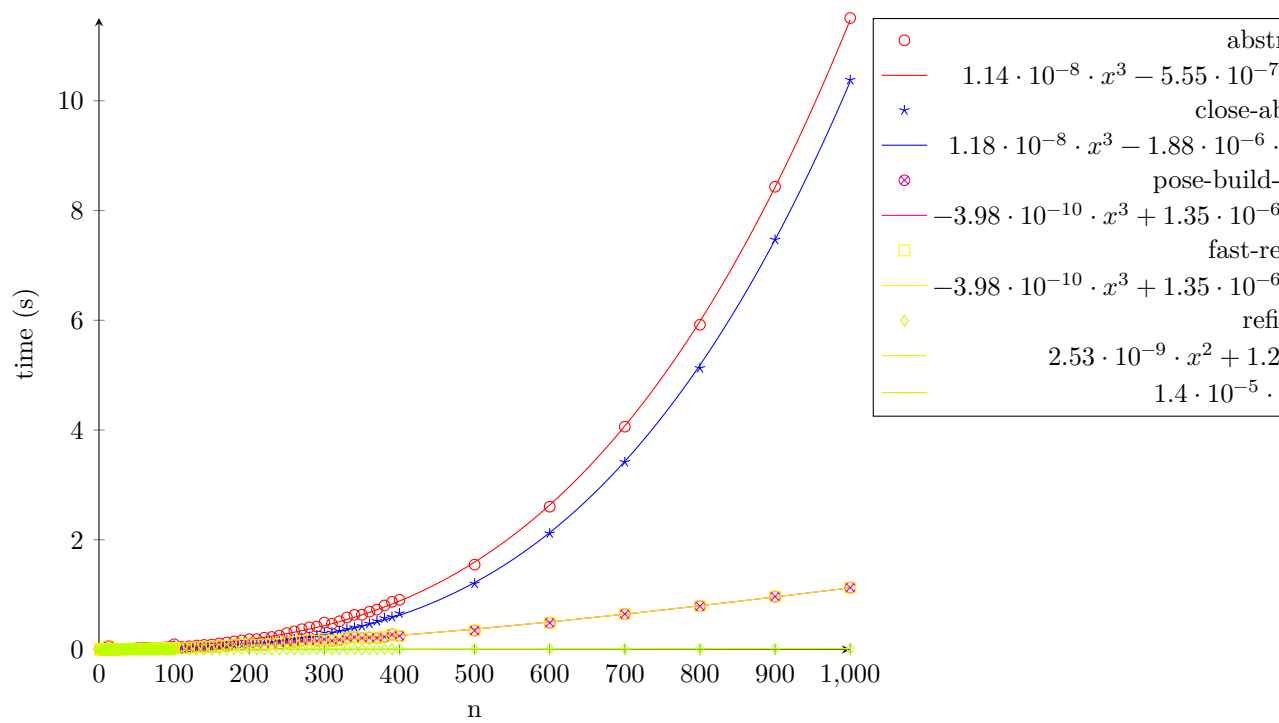
Figure 11: timing-rewrite-repeated-app-fast-rewrite
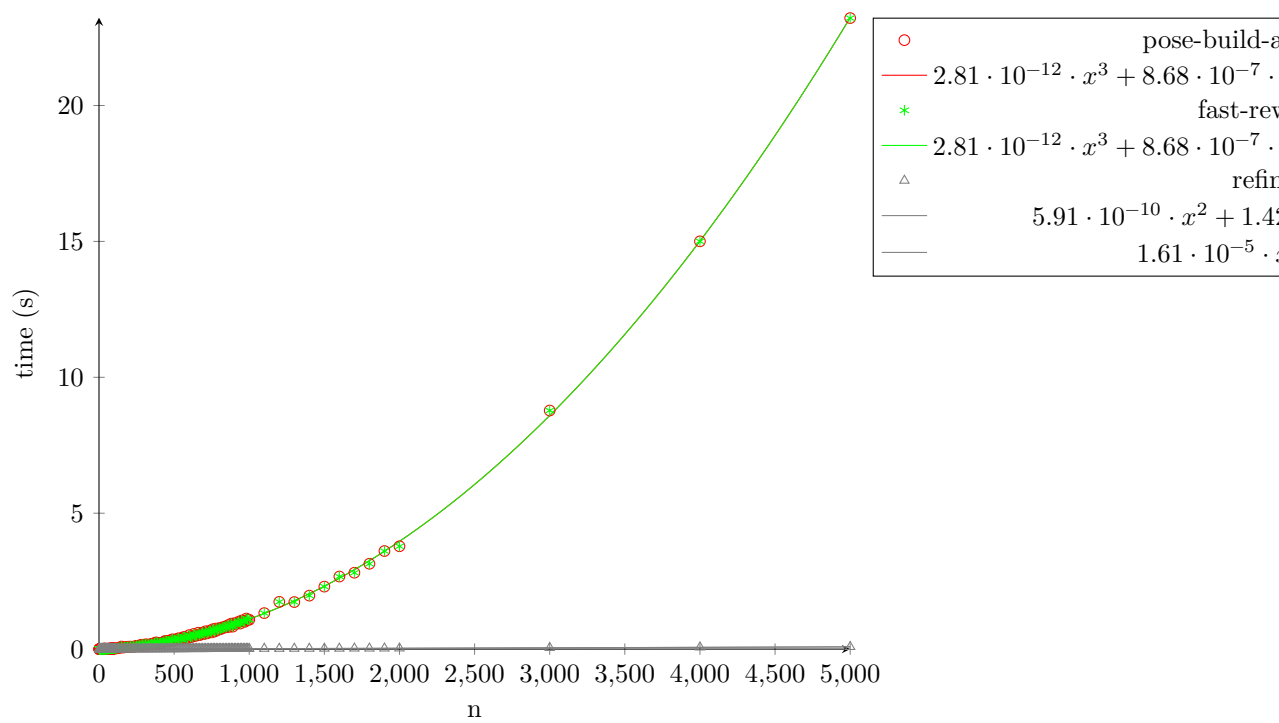
Figure 12: timing-rewrite-repeated-app-fast-rewrite-no-abstract
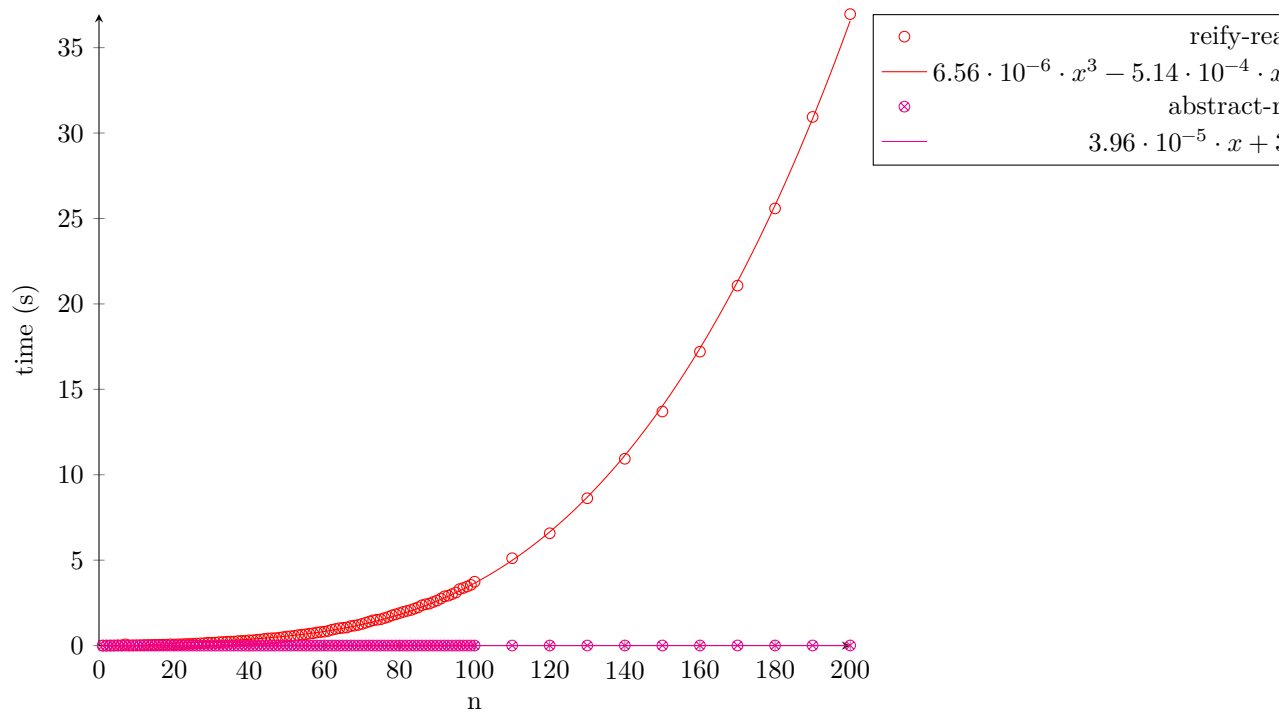
Figure 13: timing-typeclass-reification-let-in-HOAS

13

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

Figure 15: timing-rewrite-lift-lets-map param-1-n 1, param-2-m 1

15

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
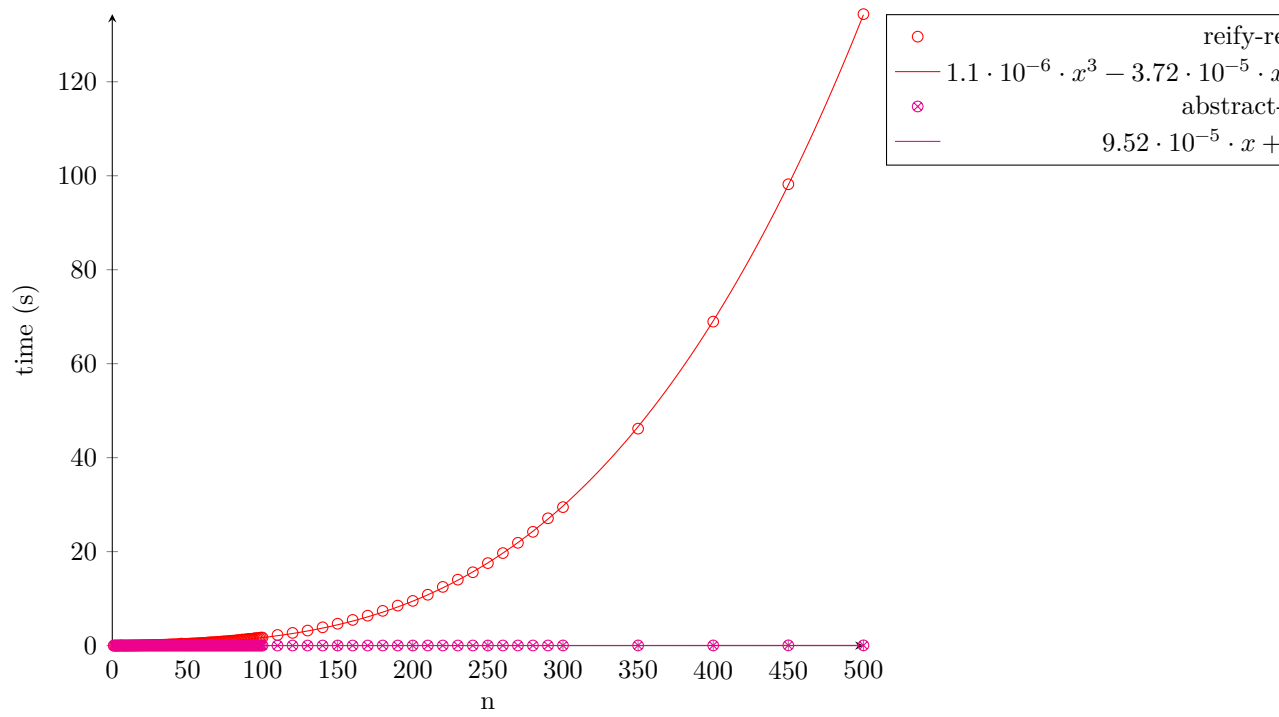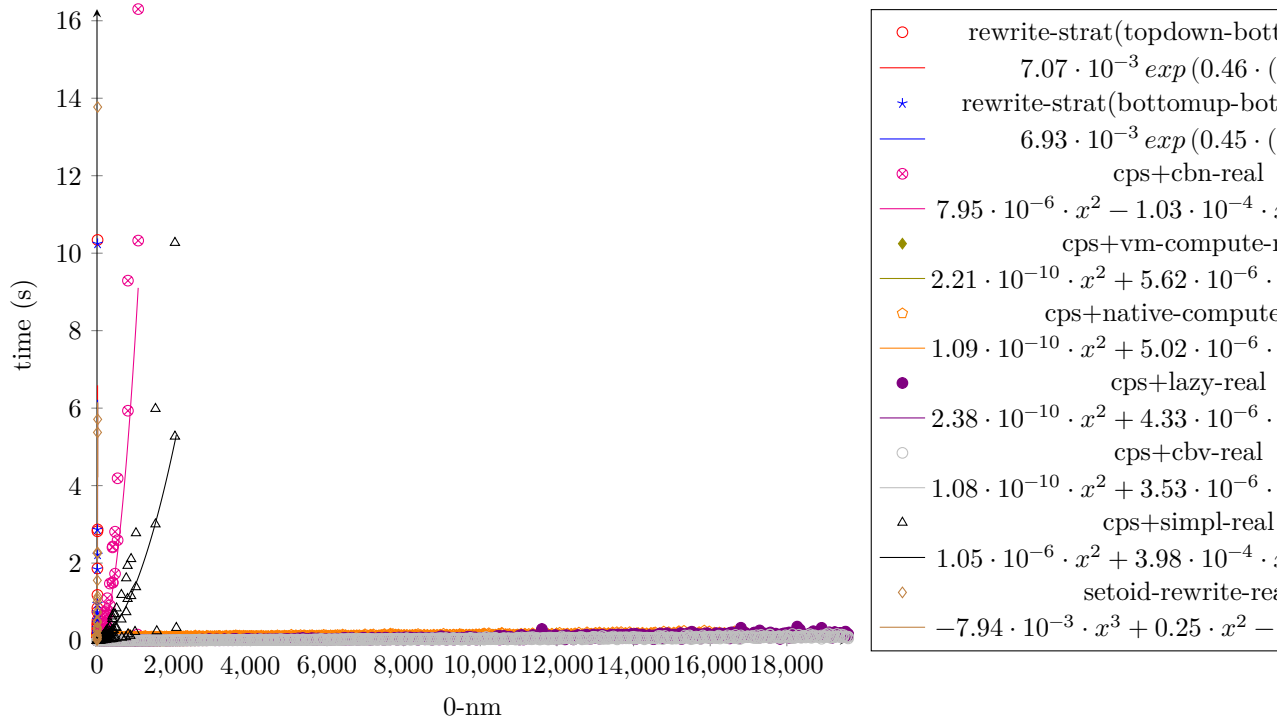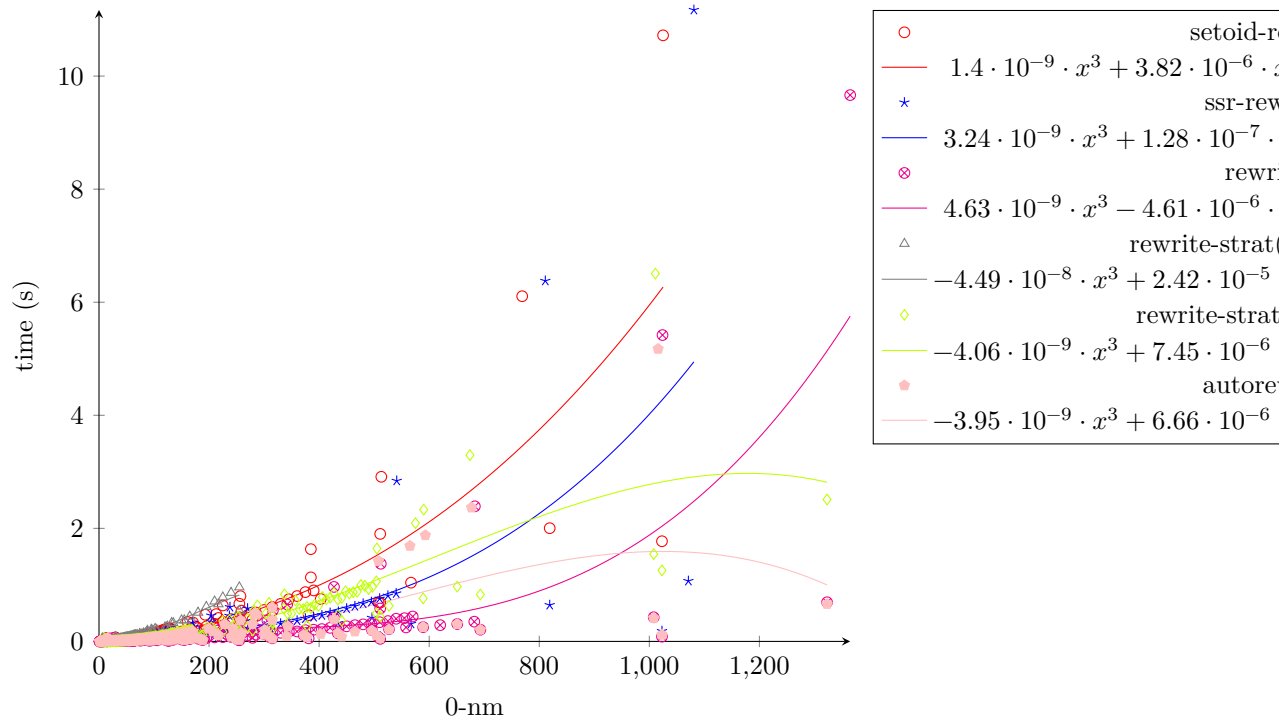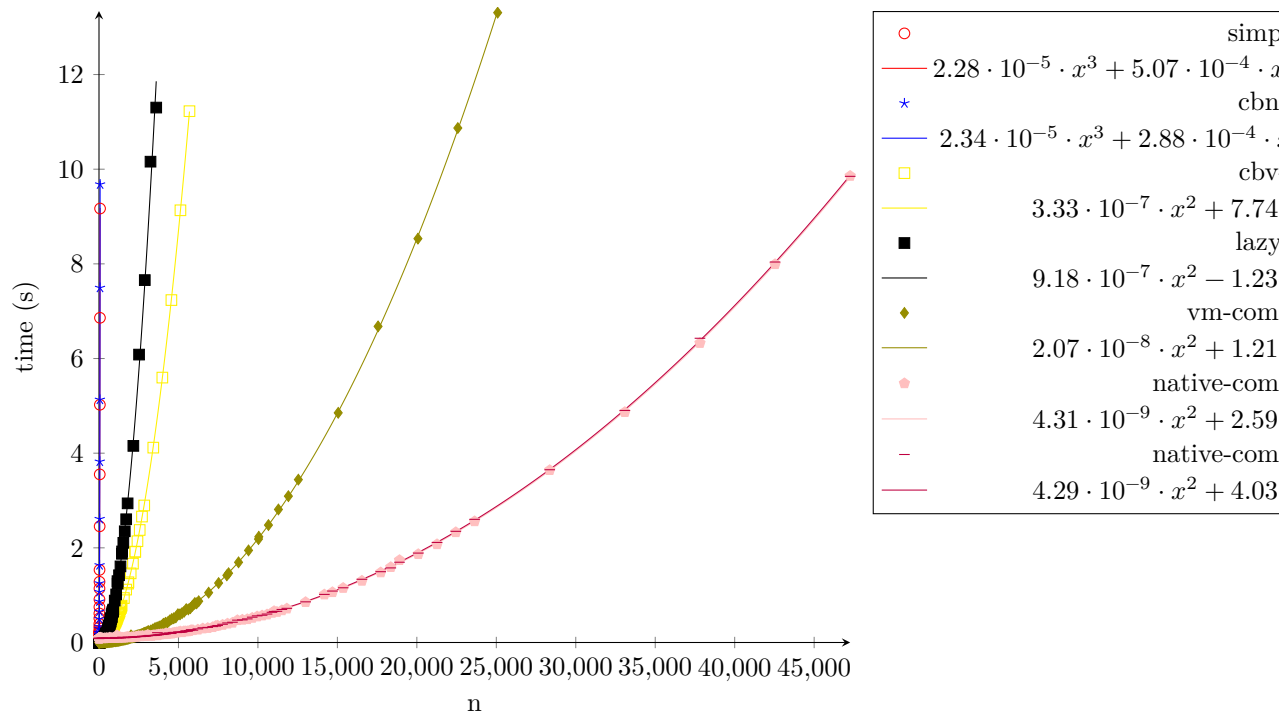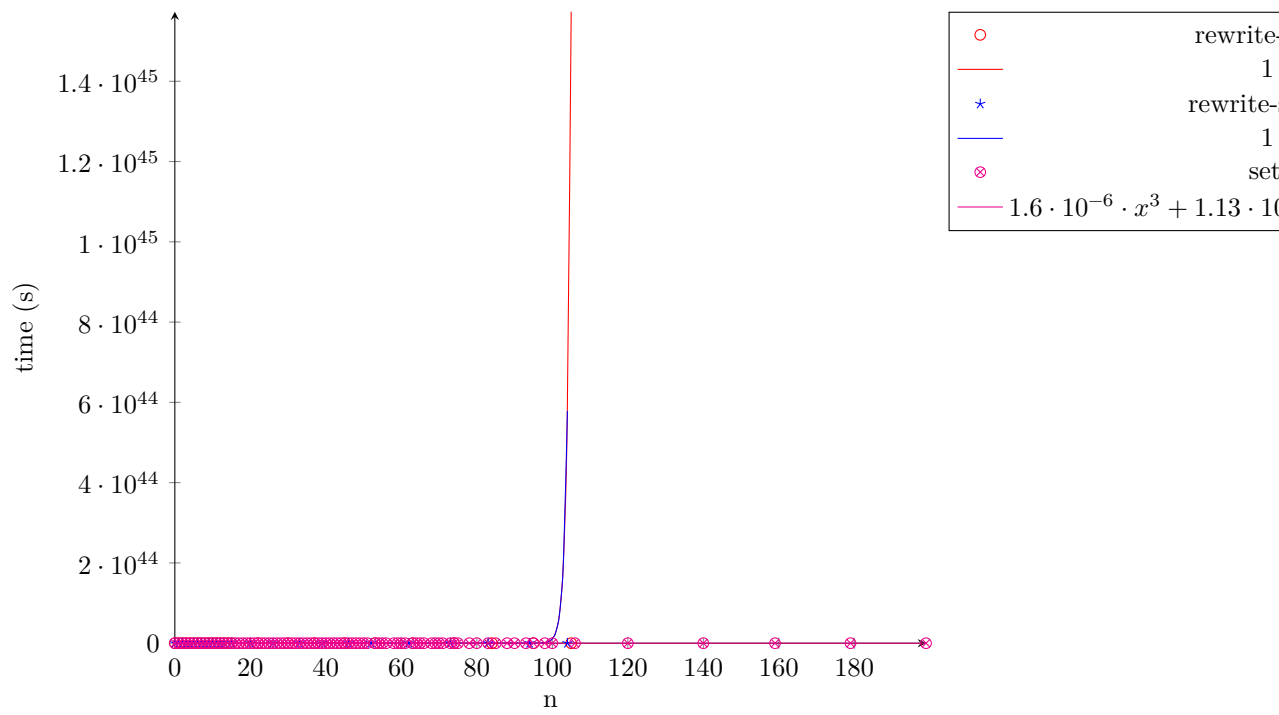
18

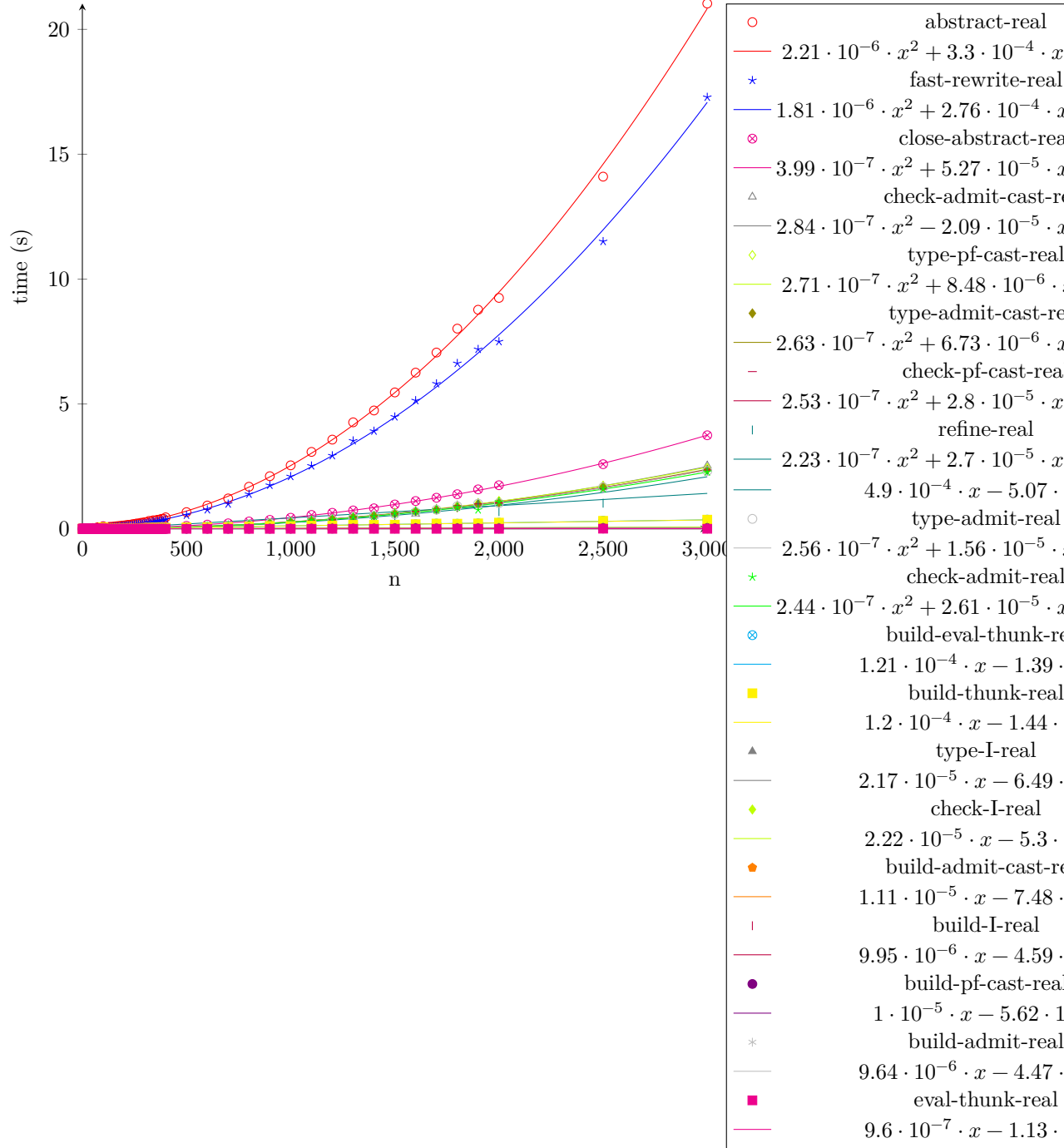|	abstract-real
	$2.21 \cdot 10^{-6} \cdot x^2 + 3.3 \cdot 10^{-4} \cdot x$
	fast-rewrite-real
	$1.81 \cdot 10^{-6} \cdot x^2 + 2.76 \cdot 10^{-4} \cdot x$
	close-abstract-rea
	$3.99 \cdot 10^{-7} \cdot x^2 + 5.27 \cdot 10^{-5} \cdot x$
	check-admit-cast-re
	$2.84 \cdot 10^{-7} \cdot x^2 - 2.09 \cdot 10^{-5} \cdot x$
	type-pf-cast-real
	$2.71 \cdot 10^{-7} \cdot x^2 + 8.48 \cdot 10^{-6} \cdot x$
	type-admit-cast-re
	$2.63 \cdot 10^{-7} \cdot x^2 + 6.73 \cdot 10^{-6} \cdot x$
	check-pf-cast-rea
	$2.53 \cdot 10^{-7} \cdot x^2 + 2.8 \cdot 10^{-5} \cdot x$
	refine-real
	$2.23 \cdot 10^{-7} \cdot x^2 + 2.7 \cdot 10^{-5} \cdot x$
	$4.9 \cdot 10^{-4} \cdot x - 5.07 \cdot$
	type-admit-real
	$2.56 \cdot 10^{-7} \cdot x^2 + 1.56 \cdot 10^{-5} \cdot x$
	check-admit-real
	$2.44 \cdot 10^{-7} \cdot x^2 + 2.61 \cdot 10^{-5} \cdot x$
	build-eval-thunk-re
	$1.21 \cdot 10^{-4} \cdot x - 1.39 \cdot$
	build-thunk-real
	$1.2 \cdot 10^{-4} \cdot x - 1.44 \cdot$
	type-I-real
	$2.17 \cdot 10^{-5} \cdot x - 6.49 \cdot$
	check-I-real
	$2.22 \cdot 10^{-5} \cdot x - 5.3 \cdot$
	build-admit-cast-re
	$1.11 \cdot 10^{-5} \cdot x - 7.48 \cdot$
	build-I-real
	$9.95 \cdot 10^{-6} \cdot x - 4.59 \cdot$
	build-pf-cast-rea
	$1 \cdot 10^{-5} \cdot x - 5.62 \cdot 1$
	build-admit-real
	$9.64 \cdot 10^{-6} \cdot x - 4.47 \cdot$
	eval-thunk-real
	$9.6 \cdot 10^{-7} \cdot x - 1.13 \cdot$

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