Figure 1: timing-pattern

1

Figure 2: timing-n-polymorphic-universes param-1-n   0
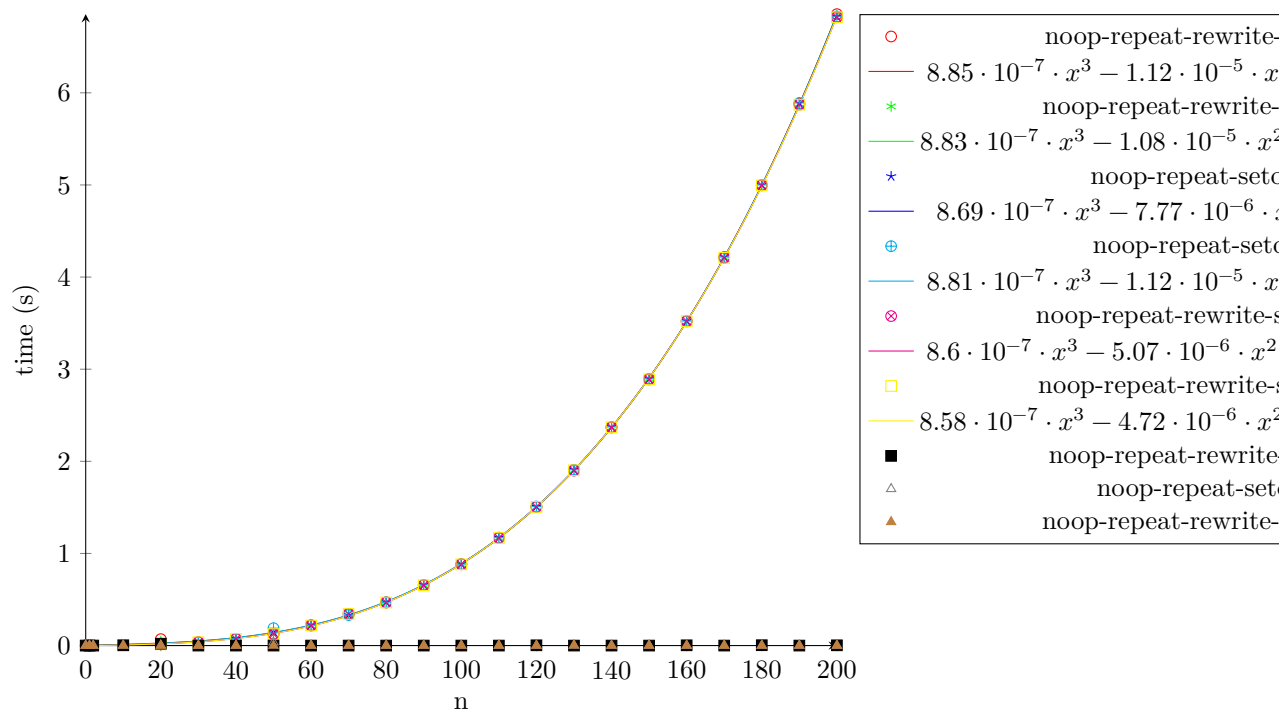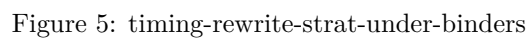
time (s)

110

100

80

60

40

20

0

0   50   100   150   200   250   300   350   400

n

repeat-seto

$1.88 \cdot 10^{-6} \cdot x^3 - 7.29 \cdot 10^{-5} \cdot$

repeat-seto

$1.88 \cdot 10^{-6} \cdot x^3 - 7.23 \cdot 10^{-5}$

abstract+set

$9.37 \cdot 10^{-7} \cdot x^3 - 1.27 \cdot 10^{-5} \cdot$

abstract+set

$9.35 \cdot 10^{-7} \cdot x^3 - 1.21 \cdot 10^{-5} \cdot$

setoid-r

$9.31 \cdot 10^{-7} \cdot x^3 - 3.05 \cdot 10^{-5}$

setoid-r

$9.29 \cdot 10^{-7} \cdot x^3 - 2.98 \cdot 10^{-5} \cdot$

noop-try-set

$9.26 \cdot 10^{-7} \cdot x^3 - 2.68 \cdot 10^{-5} \cdot$

noop-try-set

$9.25 \cdot 10^{-7} \cdot x^3 - 2.65 \cdot 10^{-5} \cdot$

noop-repeat-s

$8.88 \cdot 10^{-7} \cdot x^3 - 1.05 \cdot 10^{-5} \cdot$

noop-repeat-s

$8.9 \cdot 10^{-7} \cdot x^3 - 1.16 \cdot 10^{-5} \cdot$

close-abstract+

$2.12 \cdot 10^{-5} \cdot x^2 - 1.7$

close-abstract+

$2.12 \cdot 10^{-5} \cdot x^2 - 1.8$

repeat-seto

abstract+se

setoid-r

noop-try-set

noop-repeat-s

close-abstract+

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

3

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

The plot axes are labeled "time (s)" (vertical) and "n" (horizontal). The legend contains:

- ○ noop-repeat-rewrite-
- $8.85 \cdot 10^{-7} \cdot x^3 - 1.12 \cdot 10^{-5} \cdot x$
- ∗ noop-repeat-rewrite-
- $8.83 \cdot 10^{-7} \cdot x^3 - 1.08 \cdot 10^{-5} \cdot x^2$
- ⋆ noop-repeat-seto
- $8.69 \cdot 10^{-7} \cdot x^3 - 7.77 \cdot 10^{-6} \cdot x$
- ⊕ noop-repeat-seto
- $8.81 \cdot 10^{-7} \cdot x^3 - 1.12 \cdot 10^{-5} \cdot x$
- ⊗ noop-repeat-rewrite-
- $8.6 \cdot 10^{-7} \cdot x^3 - 5.07 \cdot 10^{-6} \cdot x^2$
- □ noop-repeat-rewrite-
- $8.58 \cdot 10^{-7} \cdot x^3 - 4.72 \cdot 10^{-6} \cdot x^2$
- ■ noop-repeat-rewrite-
- △ noop-repeat-seto
- ▲ noop-repeat-rewrite-

4

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

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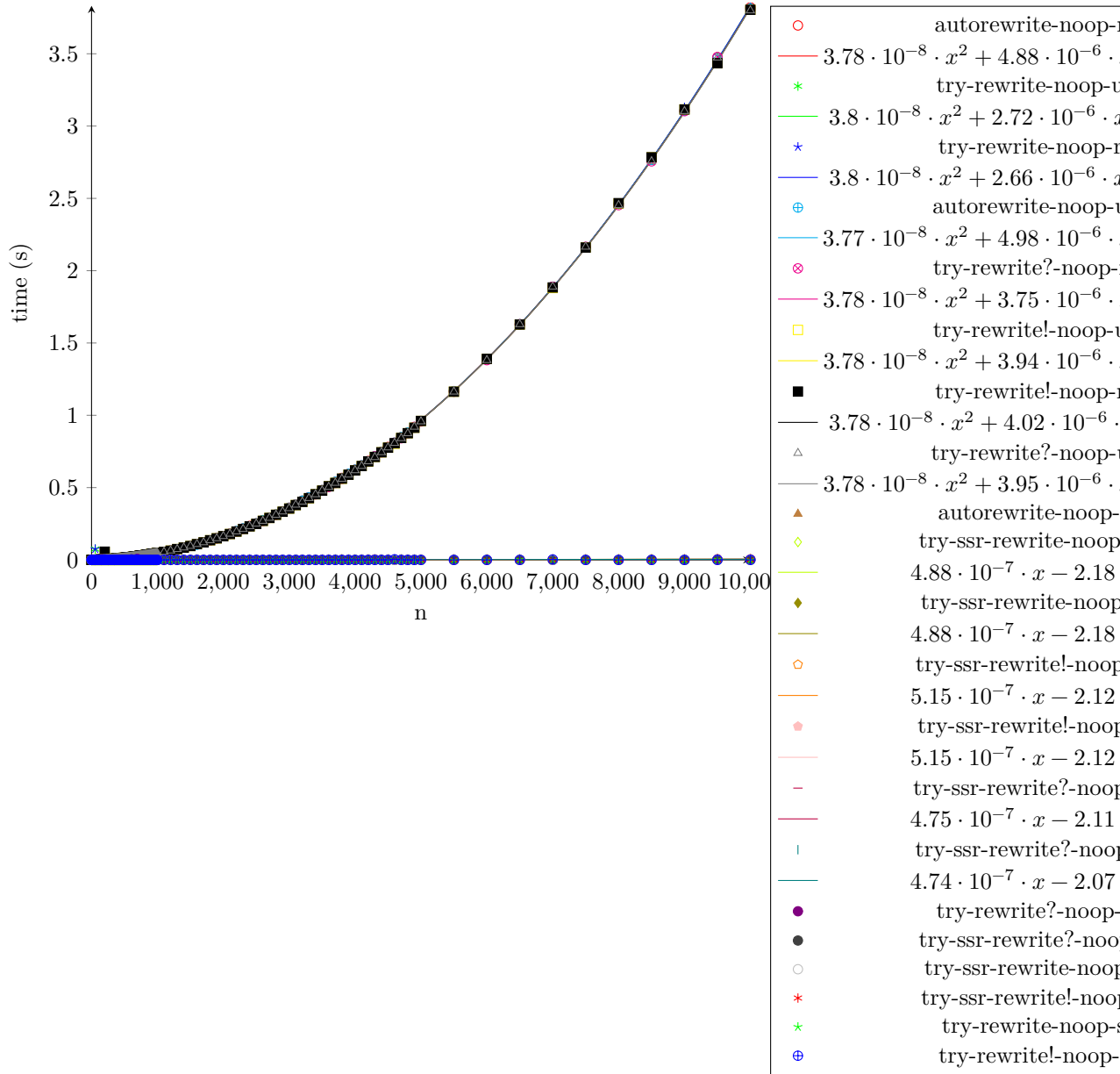
Figure 7: timing-rewrite-repeated-app-autorewrite-noop

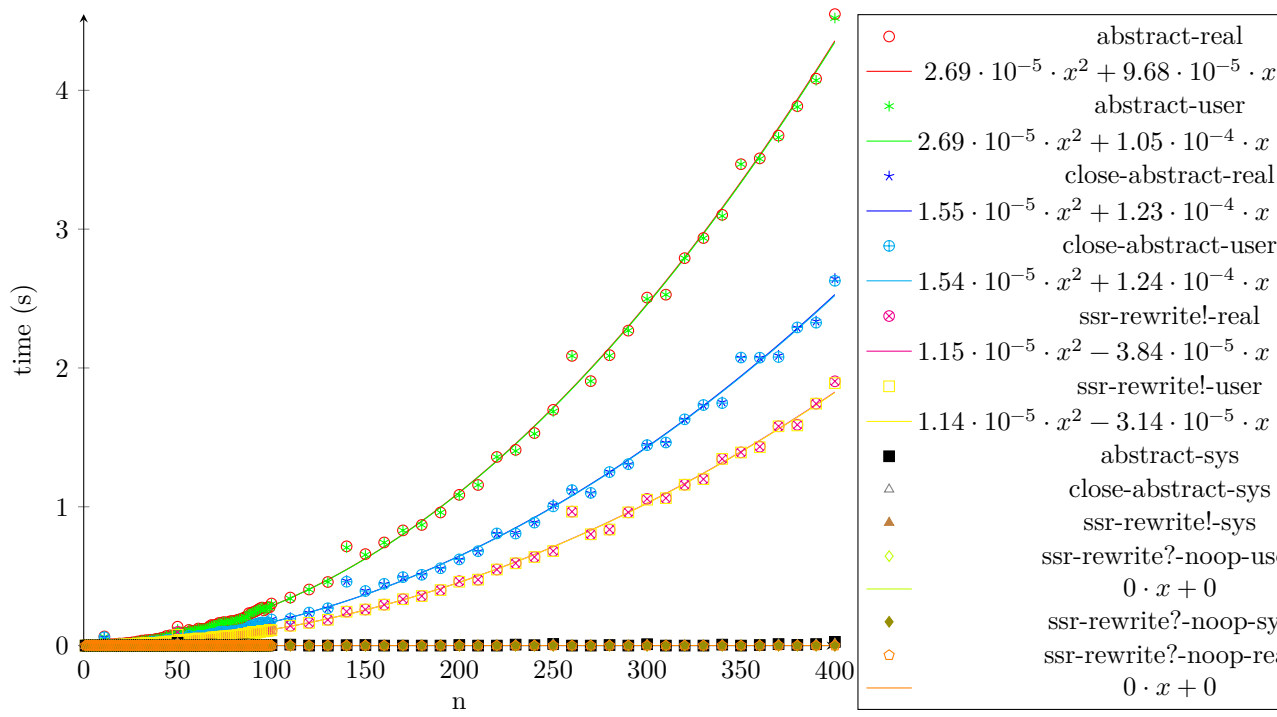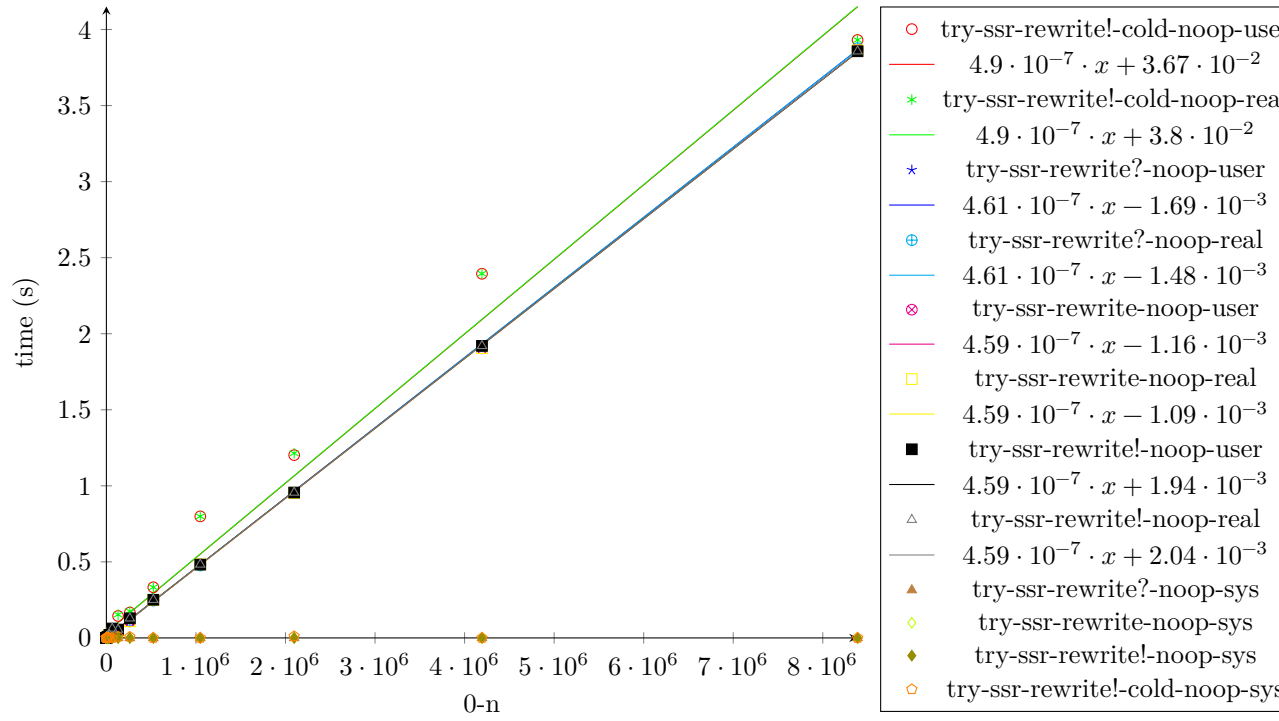Figure 8: timing-rewrite-repeated-app-ssrrewrite

8

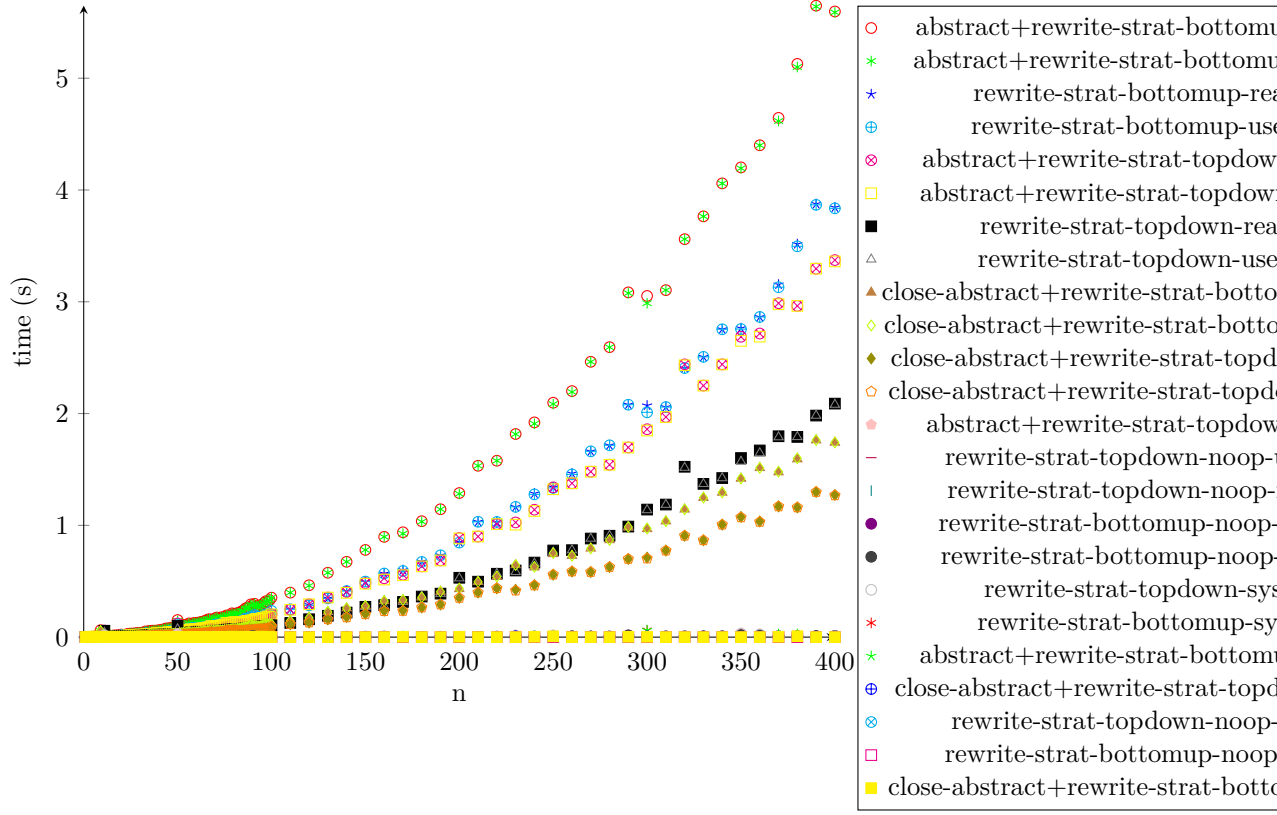Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn   1

The plot legend contains:

- try-ssr-rewrite!-cold-noop-user
- $4.9 \cdot 10^{-7} \cdot x + 3.67 \cdot 10^{-2}$
- try-ssr-rewrite!-cold-noop-real
- $4.9 \cdot 10^{-7} \cdot x + 3.8 \cdot 10^{-2}$
- try-ssr-rewrite?-noop-user
- $4.61 \cdot 10^{-7} \cdot x - 1.69 \cdot 10^{-3}$
- try-ssr-rewrite?-noop-real
- $4.61 \cdot 10^{-7} \cdot x - 1.48 \cdot 10^{-3}$
- try-ssr-rewrite-noop-user
- $4.59 \cdot 10^{-7} \cdot x - 1.16 \cdot 10^{-3}$
- try-ssr-rewrite-noop-real
- $4.59 \cdot 10^{-7} \cdot x - 1.09 \cdot 10^{-3}$
- try-ssr-rewrite!-noop-user
- $4.59 \cdot 10^{-7} \cdot x + 1.94 \cdot 10^{-3}$
- try-ssr-rewrite!-noop-real
- $4.59 \cdot 10^{-7} \cdot x + 2.04 \cdot 10^{-3}$
- try-ssr-rewrite?-noop-sys
- try-ssr-rewrite-noop-sys
- try-ssr-rewrite!-noop-sys
- try-ssr-rewrite!-cold-noop-sys

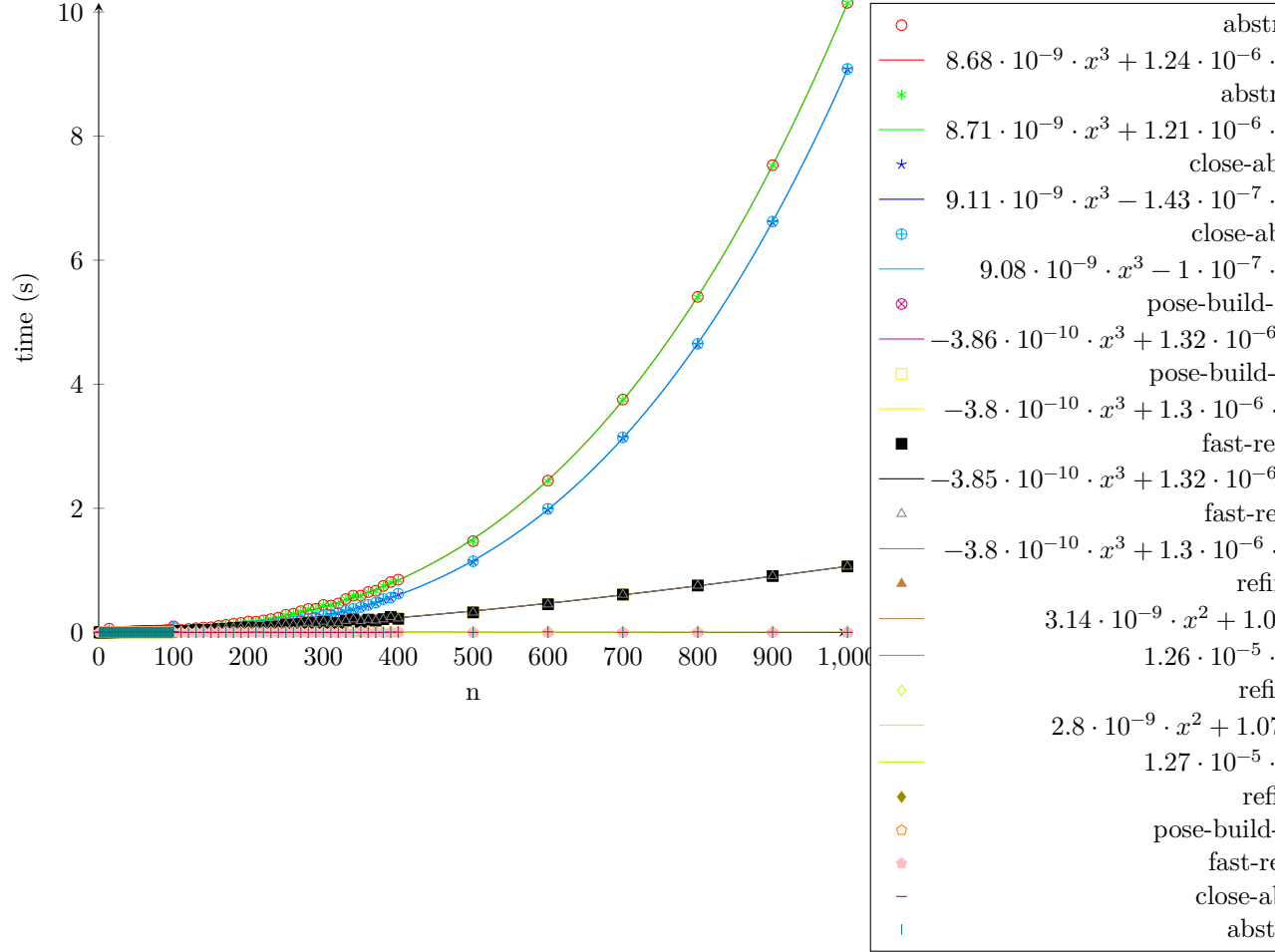Figure 10: timing-rewrite-repeated-app-rewrite-strat
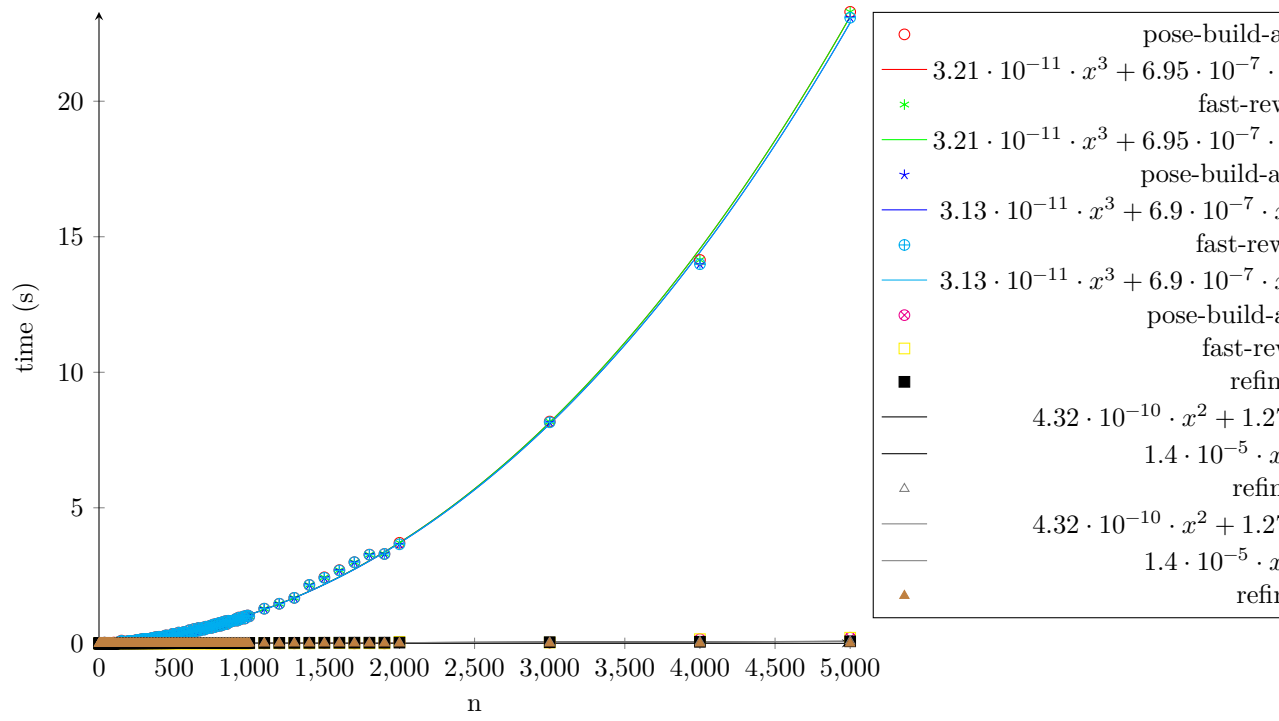
Figure 11: timing-rewrite-repeated-app-fast-rewrite

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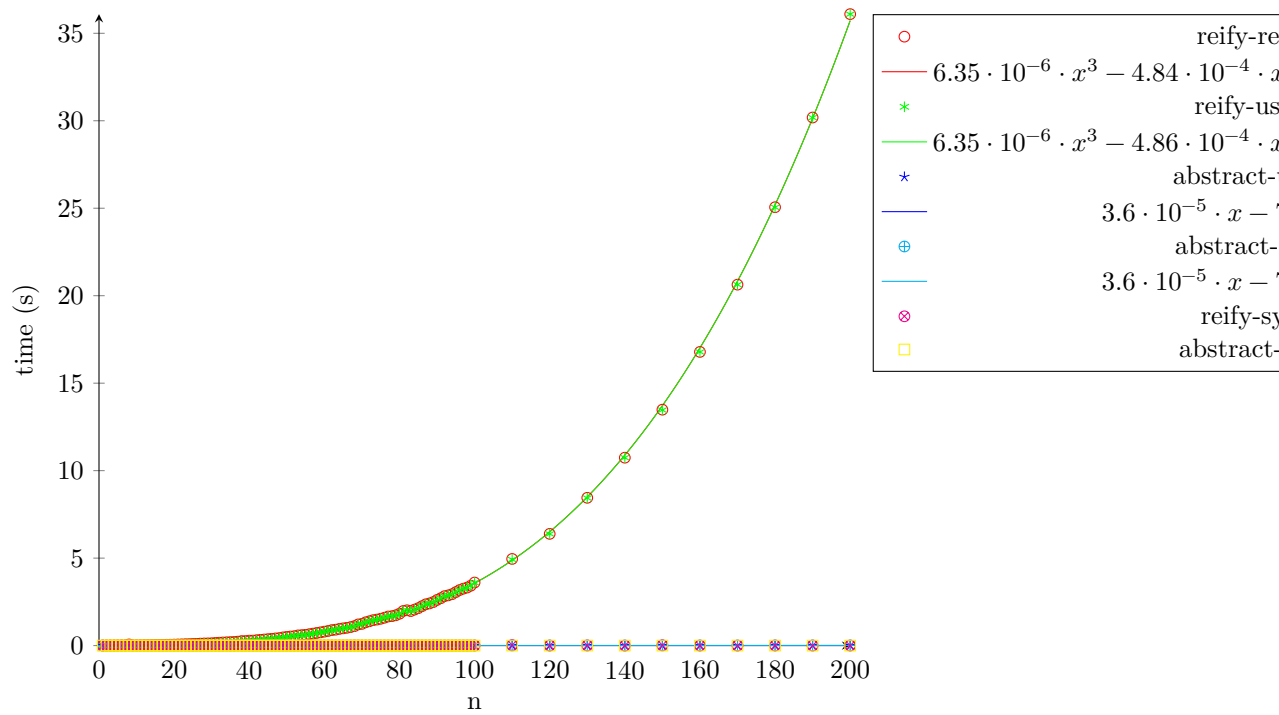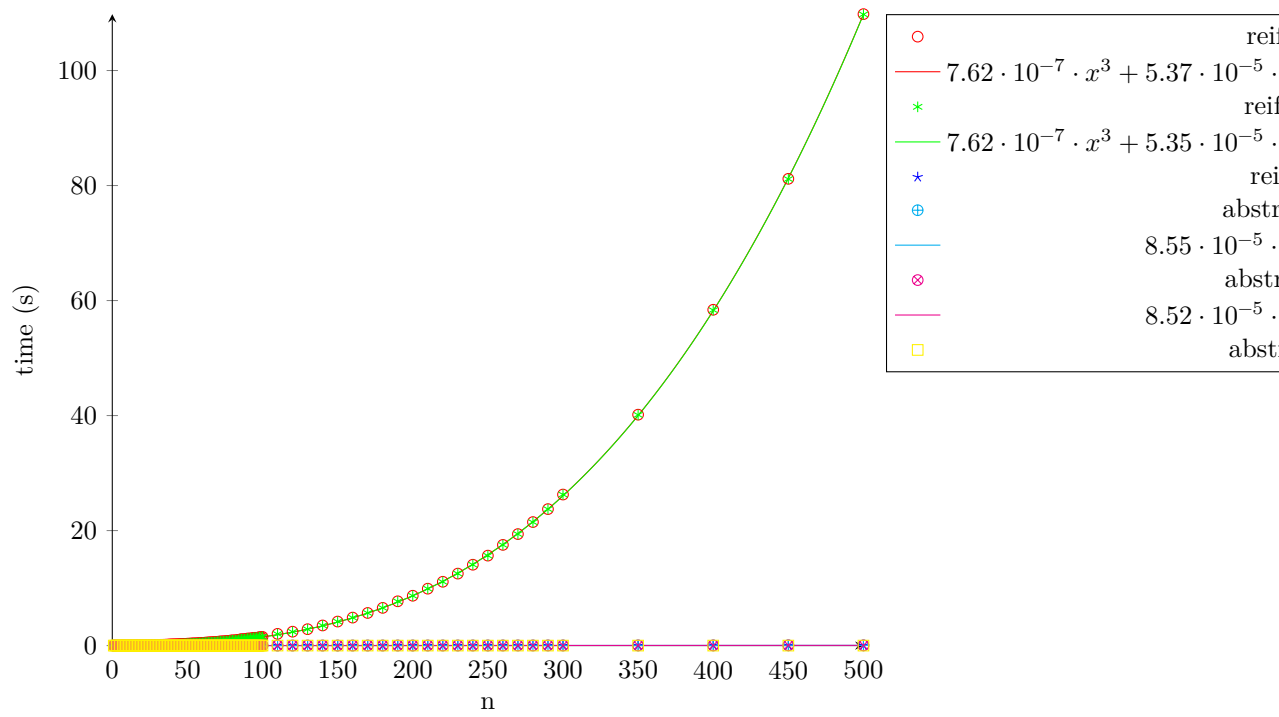
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Figure 13: timing-typeclass-reification-let-in-HOAS

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