Figure 1: timing-pattern

1

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

The legend of the figure contains:

- abstract-real
  $1.73 \cdot 10^{-9} \cdot x^2 + 1.93 \cdot 10^{-4} \cdot$
- abstract-user
  $1.66 \cdot 10^{-9} \cdot x^2 + 1.89 \cdot 10^{-4} \cdot$
- close-abstract-real
  $1.63 \cdot 10^{-9} \cdot x^2 + 1.34 \cdot 10^{-4} \cdot$
- close-abstract-user
  $1.58 \cdot 10^{-9} \cdot x^2 + 1.31 \cdot 10^{-4} \cdot$
- exact-real
  $6 \cdot 10^{-5} \cdot x - 3.88 \cdot$
- exact-user
  $5.88 \cdot 10^{-5} \cdot x - 4.17$
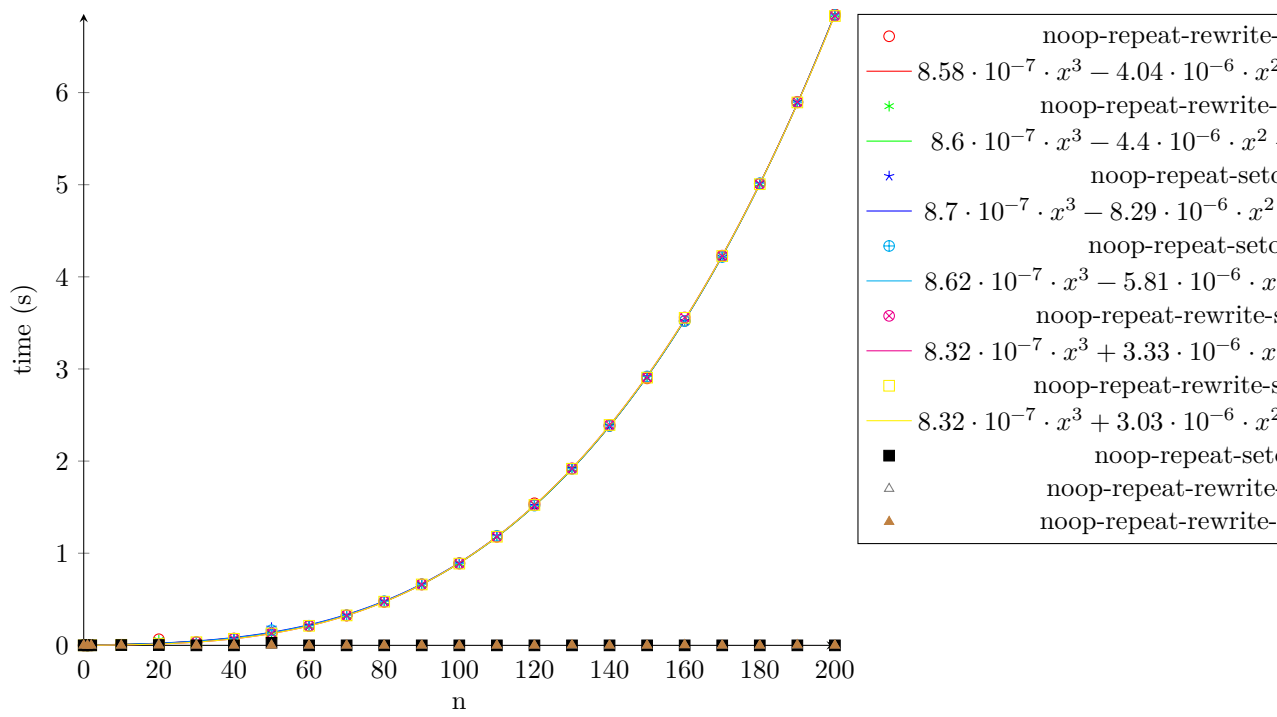- abstract-sys
- close-abstract-sys
- exact-sys

Figure 3: timing-repeat-setoid-rewrite-under-binders
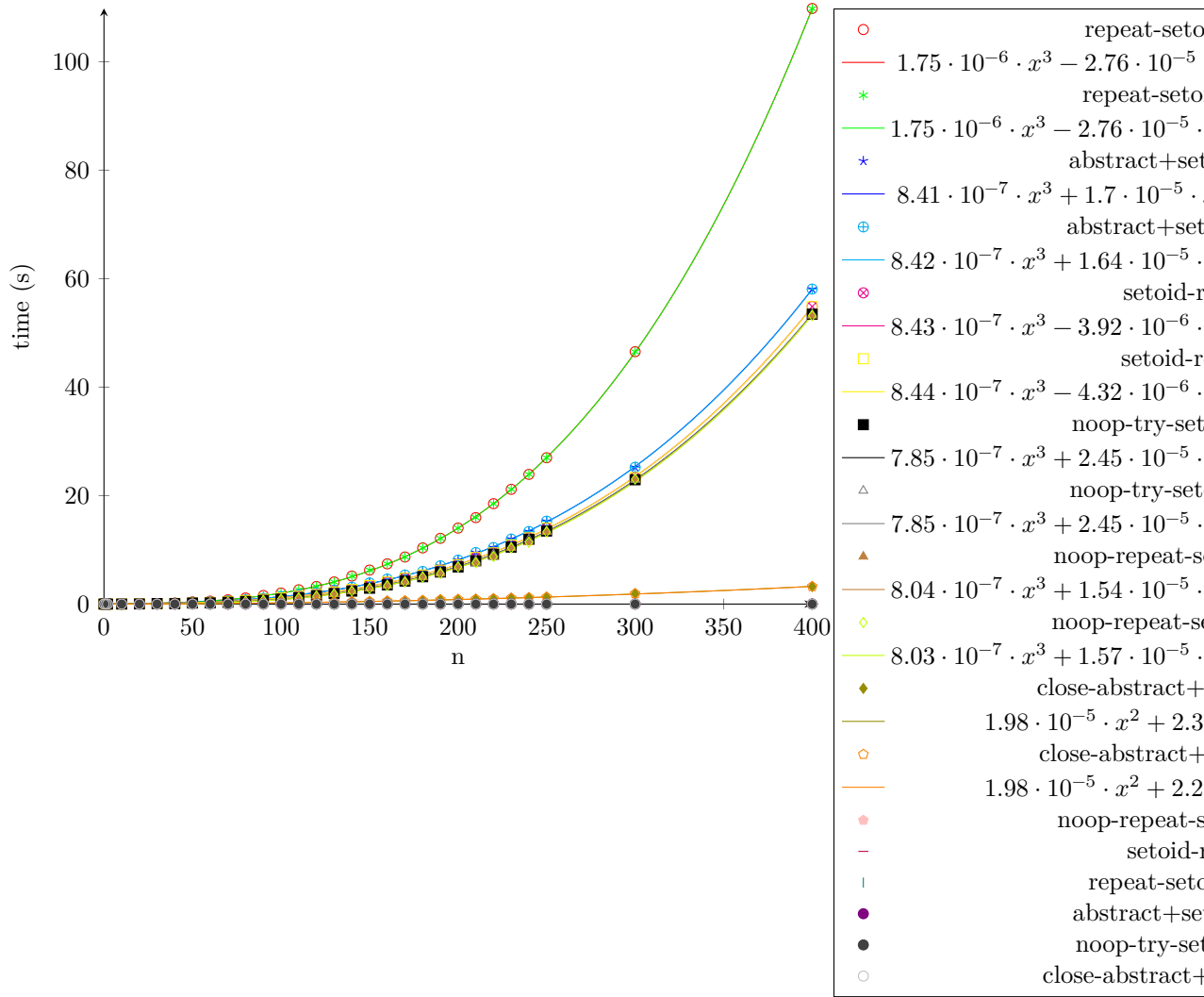
Figure 4: timing-repeat-setoid-rewrite-under-binders-noop
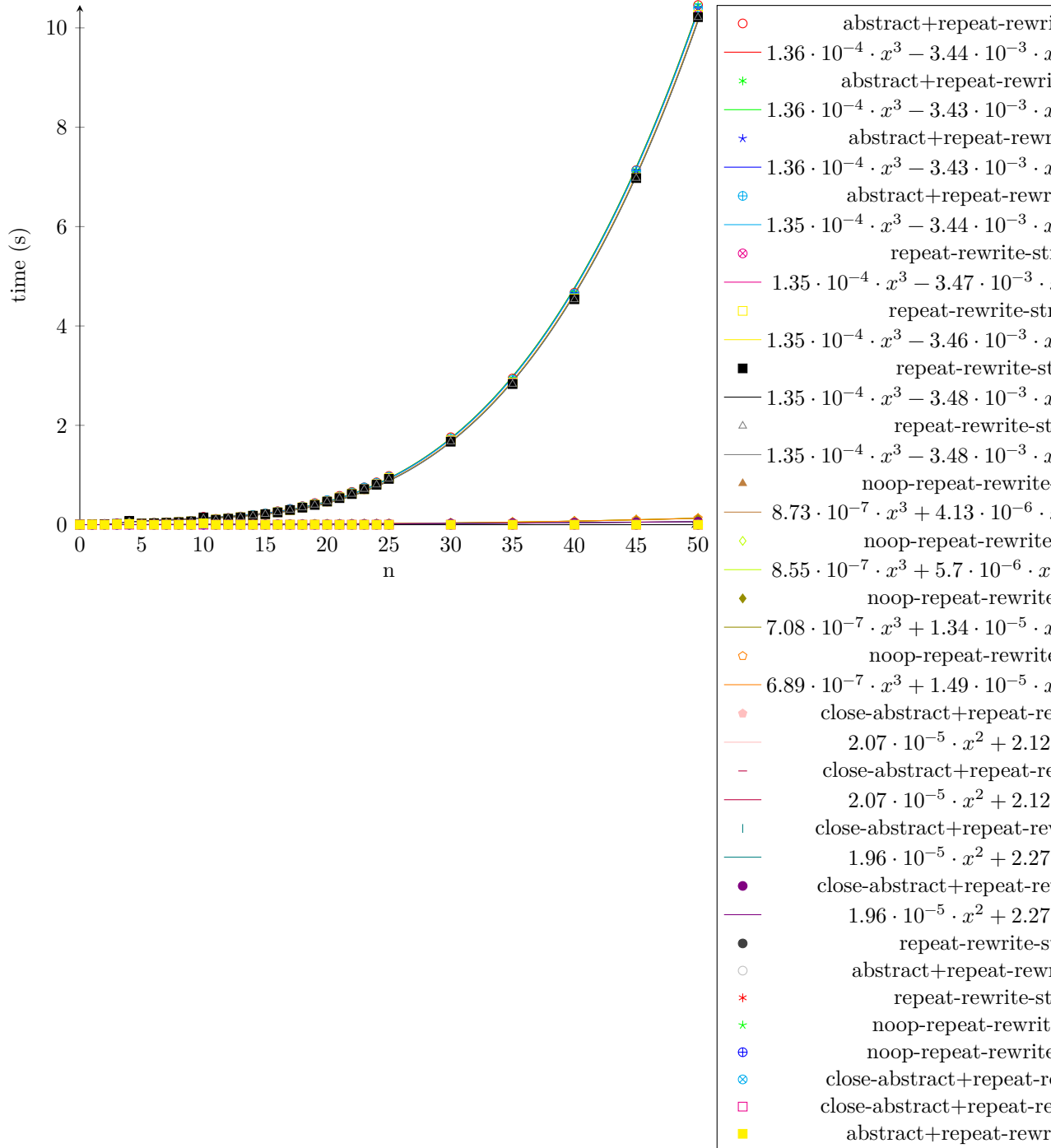
4

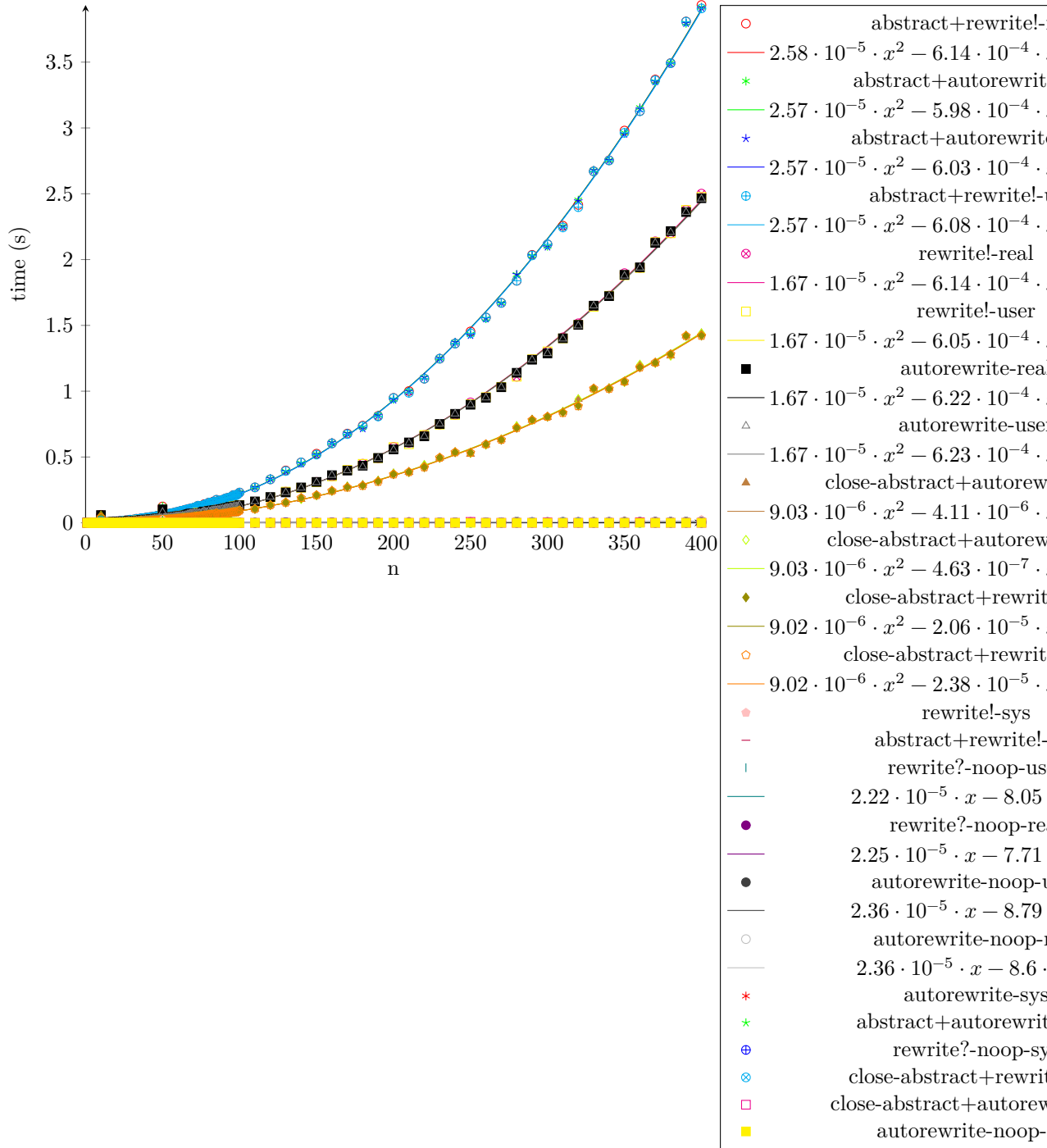Figure 5: timing-rewrite-strat-under-binders

5

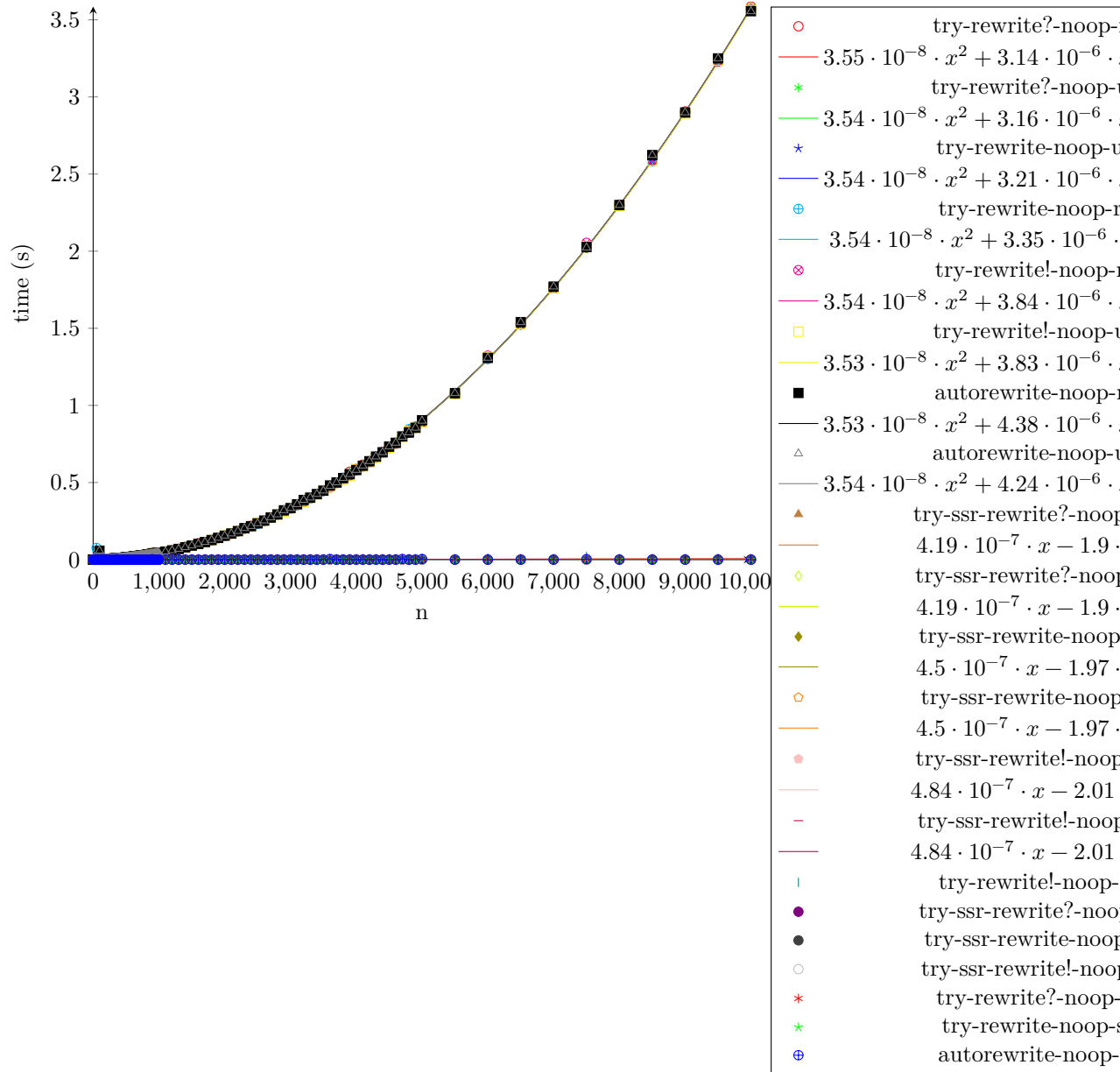Figure 6: timing-rewrite-repeated-app-autorewrite

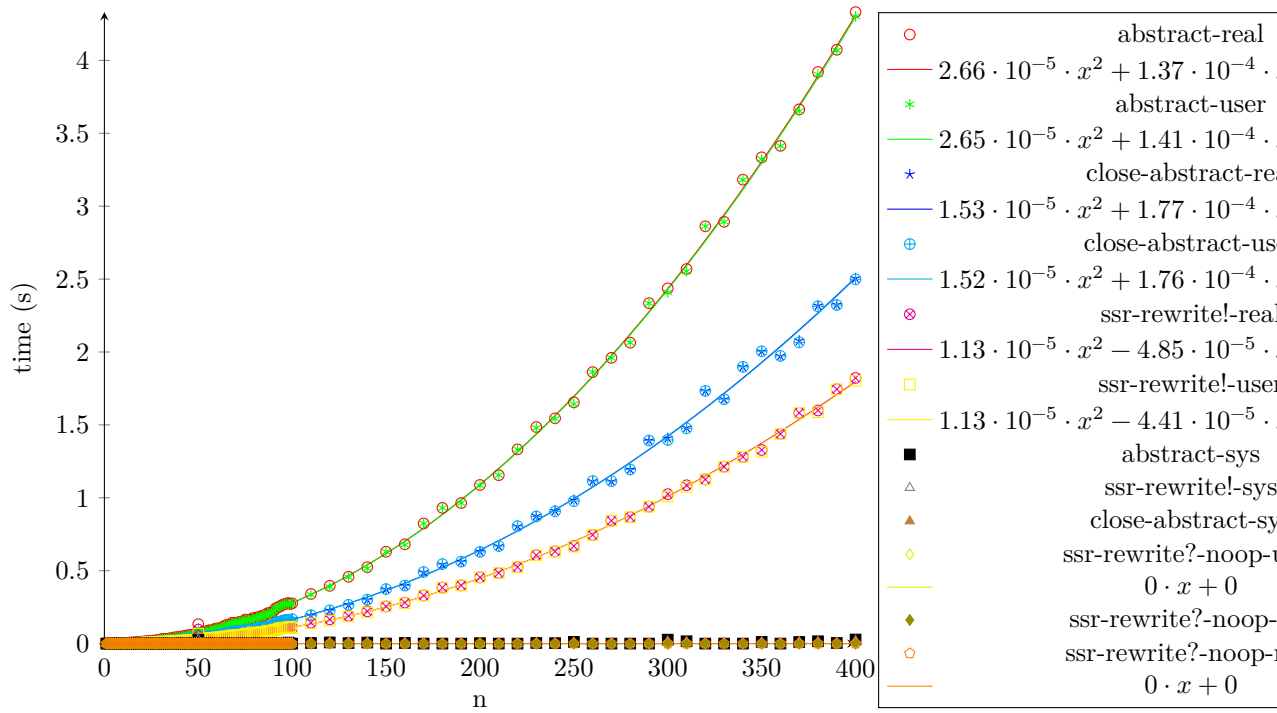Figure 7: timing-rewrite-repeated-app-autorewrite-noop

Figure 8: timing-rewrite-repeated-app-ssrrewrite
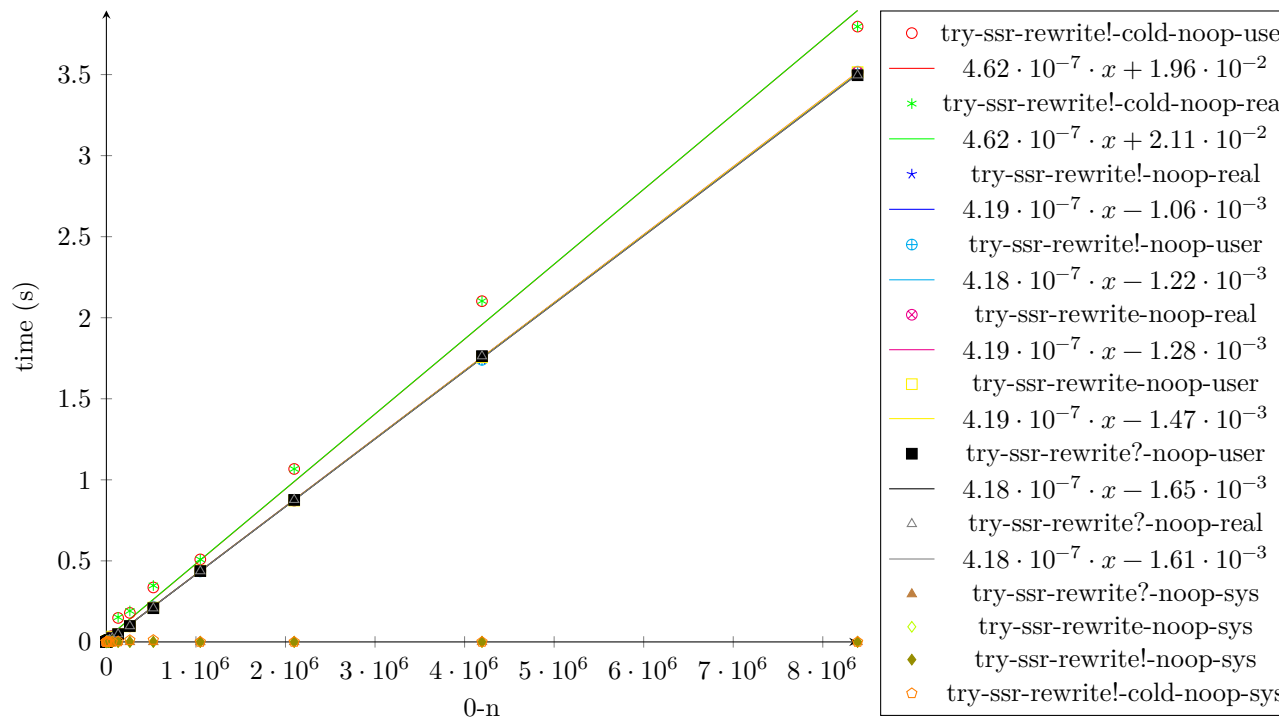
Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn 1
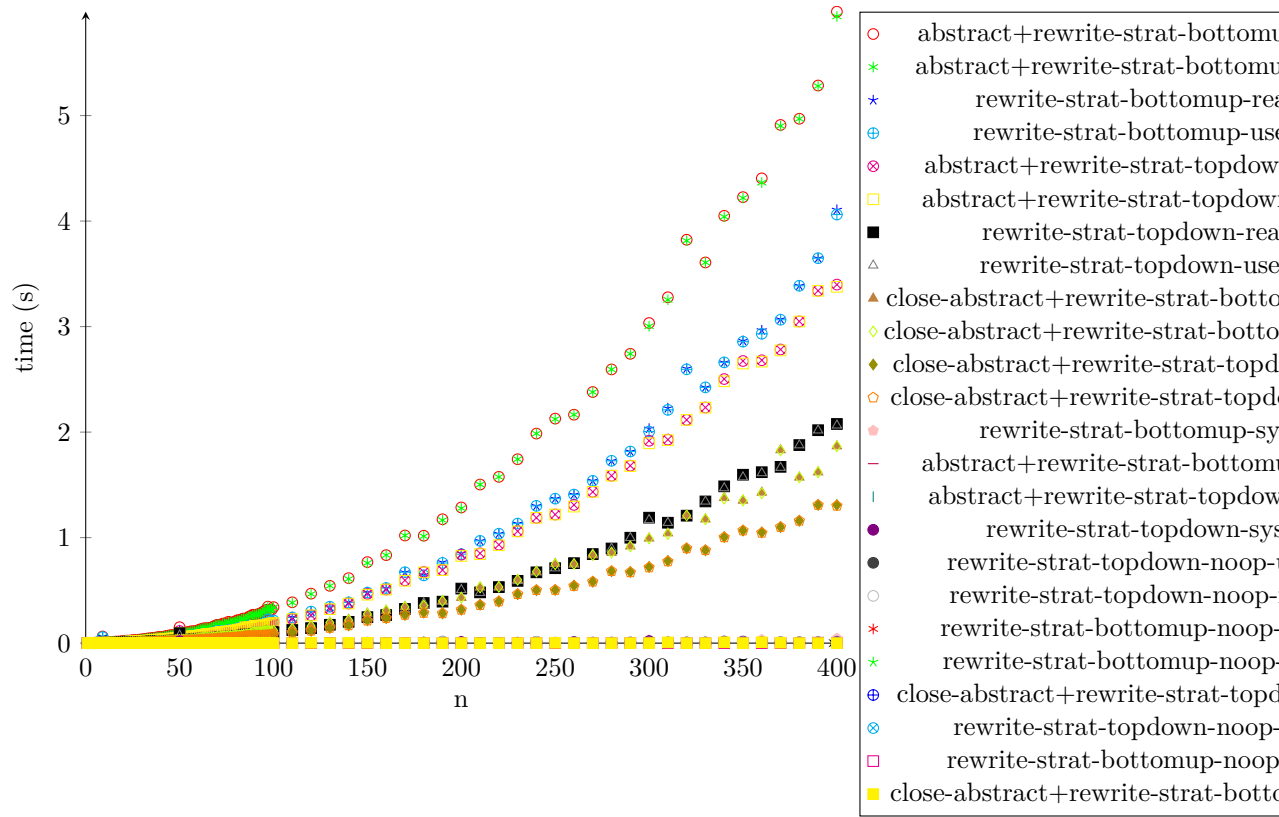
Figure 10: timing-rewrite-repeated-app-rewrite-strat

time (s)

$8.36 \cdot 10^{-9} \cdot x^3 + 1.49 \cdot 10^{-6} \cdot x$

$8.43 \cdot 10^{-9} \cdot x^3 + 1.38 \cdot 10^{-6} \cdot$

$8.57 \cdot 10^{-9} \cdot x^3 + 4.91 \cdot 10^{-7} \cdot x$

$8.55 \cdot 10^{-9} \cdot x^3 + 5.01 \cdot 10^{-7} \cdot x$

$-2.23 \cdot 10^{-10} \cdot x^3 + 1.02 \cdot 10^{-6} \cdot$

$-2.23 \cdot 10^{-10} \cdot x^3 + 1.02 \cdot 10^{-6} \cdot$

$-1.39 \cdot 10^{-10} \cdot x^3 + 9.04 \cdot 10^{-7} \cdot$

$-1.38 \cdot 10^{-10} \cdot x^3 + 9.03 \cdot 10^{-7} \cdot$

$-2.73 \cdot 10^{-9} \cdot x^2 + 1.6$

$1.42 \cdot 10^{-5} \cdot$

$-4.02 \cdot 10^{-9} \cdot x^2 + 1.7$

$1.44 \cdot 10^{-5} \cdot x$

abstra

abstra

close-abs

close-abs

pose-build-a

fast-rew

pose-build-a

fast-rew

abstra

refin

refin

close-ab

pose-build-a

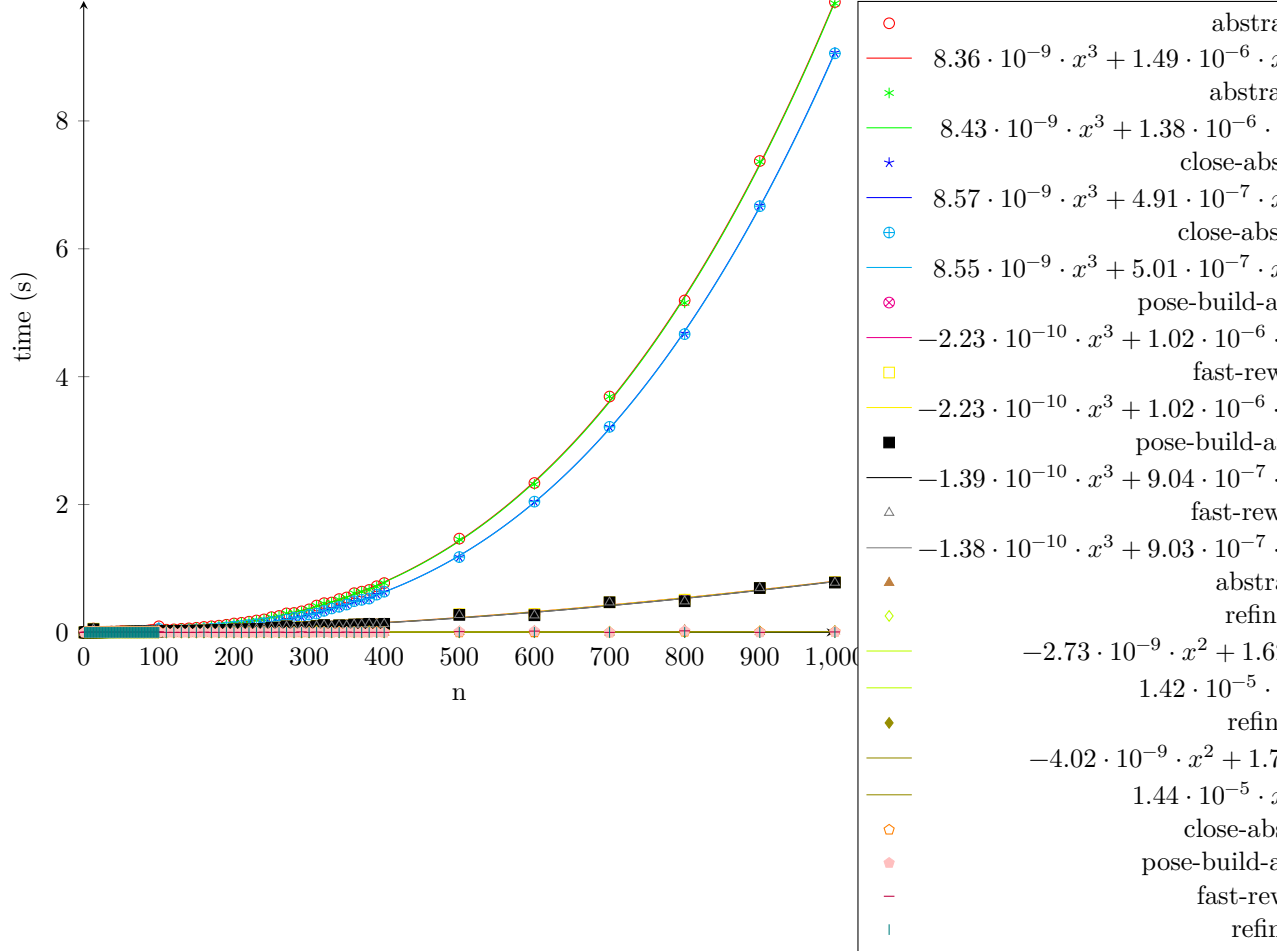fast-rew

refin

n

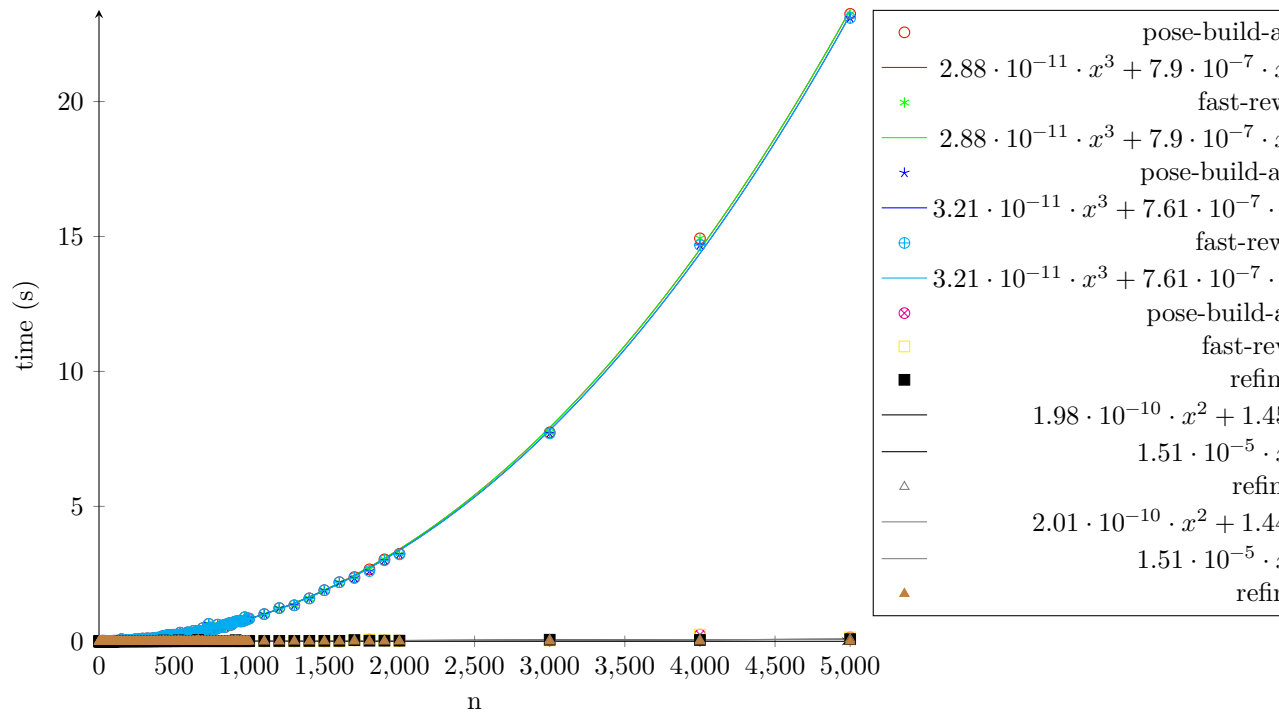Figure 11: timing-rewrite-repeated-app-fast-rewrite

11

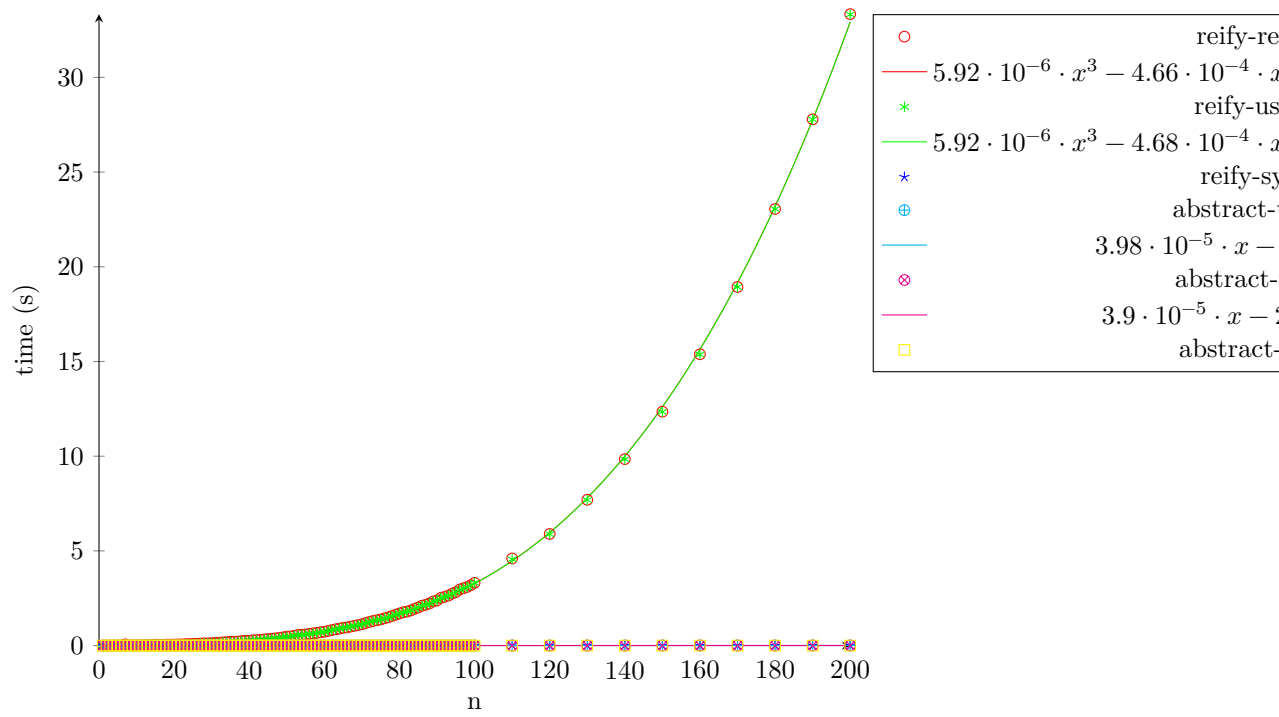Figure 12: timing-rewrite-repeated-app-fast-rewrite-no-abstract
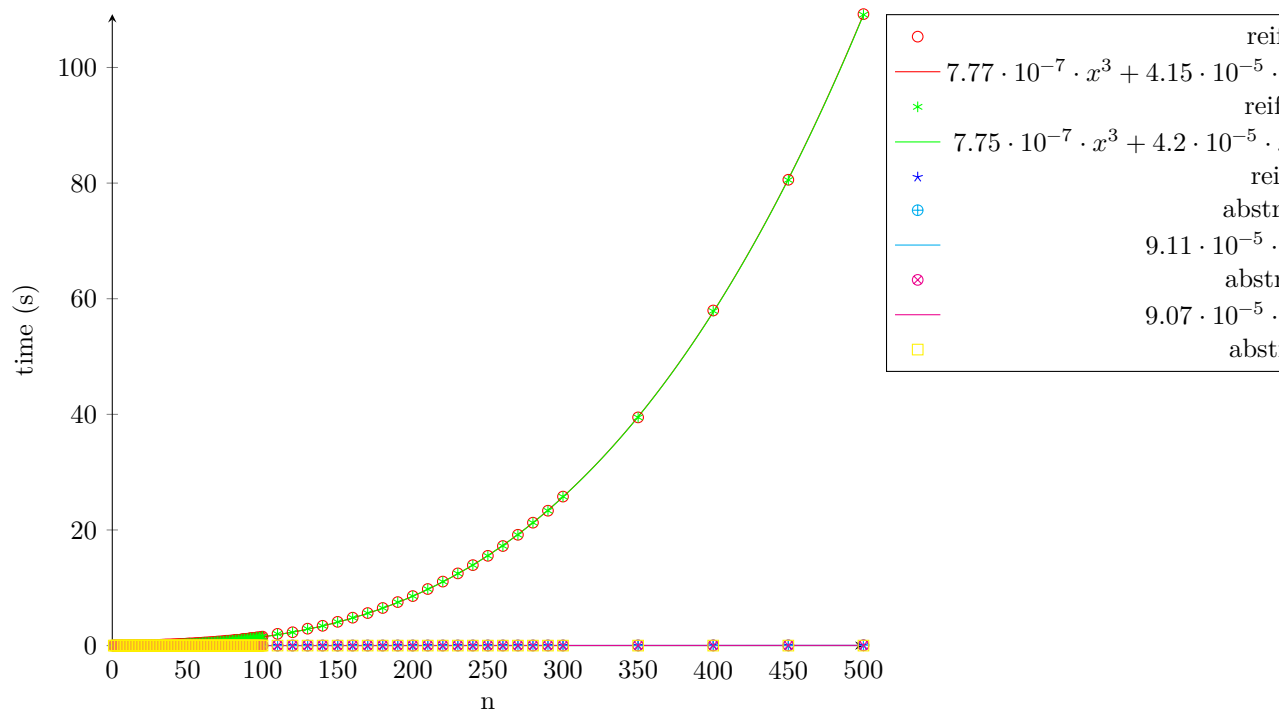
12

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

13

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

time (s)

n

abstract-real
$2.7 \cdot 10^{-6} \cdot x^2 - 1.66 \cdot 10^{-3}$
abstract-user
$2.7 \cdot 10^{-6} \cdot x^2 - 1.67 \cdot 10^{-3}$
fast-rewrite-real
$2.41 \cdot 10^{-6} \cdot x^2 - 1.7 \cdot 10^{-3}$
fast-rewrite-user
$2.41 \cdot 10^{-6} \cdot x^2 - 1.71 \cdot 10^{-3}$
check-admit-cast-real
$3.88 \cdot 10^{-7} \cdot x^2 - 3.29 \cdot 10^{-4} \cdot x$
check-admit-cast-user
$3.88 \cdot 10^{-7} \cdot x^2 - 3.29 \cdot 10^{-4} \cdot x$
check-admit-real
$3.74 \cdot 10^{-7} \cdot x^2 - 3.15 \cdot 10^{-4} \cdot x$
check-admit-user
$3.74 \cdot 10^{-7} \cdot x^2 - 3.16 \cdot 10^{-4} \cdot x$
close-abstract-user
$2.84 \cdot 10^{-7} \cdot x^2 + 3.59 \cdot 10^{-5} \cdot x$
close-abstract-real
$2.84 \cdot 10^{-7} \cdot x^2 + 3.72 \cdot 10^{-5} \cdot x$
check-pf-cast-user
$3.28 \cdot 10^{-7} \cdot x^2 - 2.48 \cdot 10^{-4} \cdot x$
check-pf-cast-real
$3.28 \cdot 10^{-7} \cdot x^2 - 2.48 \cdot 10^{-4} \cdot x$
refine-user
$3.23 \cdot 10^{-7} \cdot x^2 - 2.31 \cdot 10^{-4} \cdot x$
$4.41 \cdot 10^{-4} \cdot x - 5.27 \cdot$
refine-real
$3.23 \cdot 10^{-7} \cdot x^2 - 2.3 \cdot 10^{-4} \cdot x$
$4.41 \cdot 10^{-4} \cdot x - 5.26 \cdot$
type-admit-cast-user
$3.42 \cdot 10^{-7} \cdot x^2 - 2.68 \cdot 10^{-4} \cdot x$
type-admit-cast-real
$3.42 \cdot 10^{-7} \cdot x^2 - 2.67 \cdot 10^{-4} \cdot x$
type-pf-cast-real
$3.24 \cdot 10^{-7} \cdot x^2 - 2.34 \cdot 10^{-4} \cdot x$
type-pf-cast-user
$3.24 \cdot 10^{-7} \cdot x^2 - 2.34 \cdot 10^{-4} \cdot x$
type-admit-user
$3.27 \cdot 10^{-7} \cdot x^2 - 2.43 \cdot 10^{-4} \cdot x$
type-admit-real
$3.27 \cdot 10^{-7} \cdot x^2 - 2.42 \cdot 10^{-4} \cdot x$
build-eval-thunk-user
$1.07 \cdot 10^{-4} \cdot x - 7.52 \cdot$
build-eval-thunk-real
$1.08 \cdot 10^{-4} \cdot x - 6.38 \cdot$
build-thunk-user
$1.06 \cdot 10^{-4} \cdot x - 8.19 \cdot$
build-thunk-real
$1.07 \cdot 10^{-4} \cdot x - 6.91 \cdot$
check-L-user