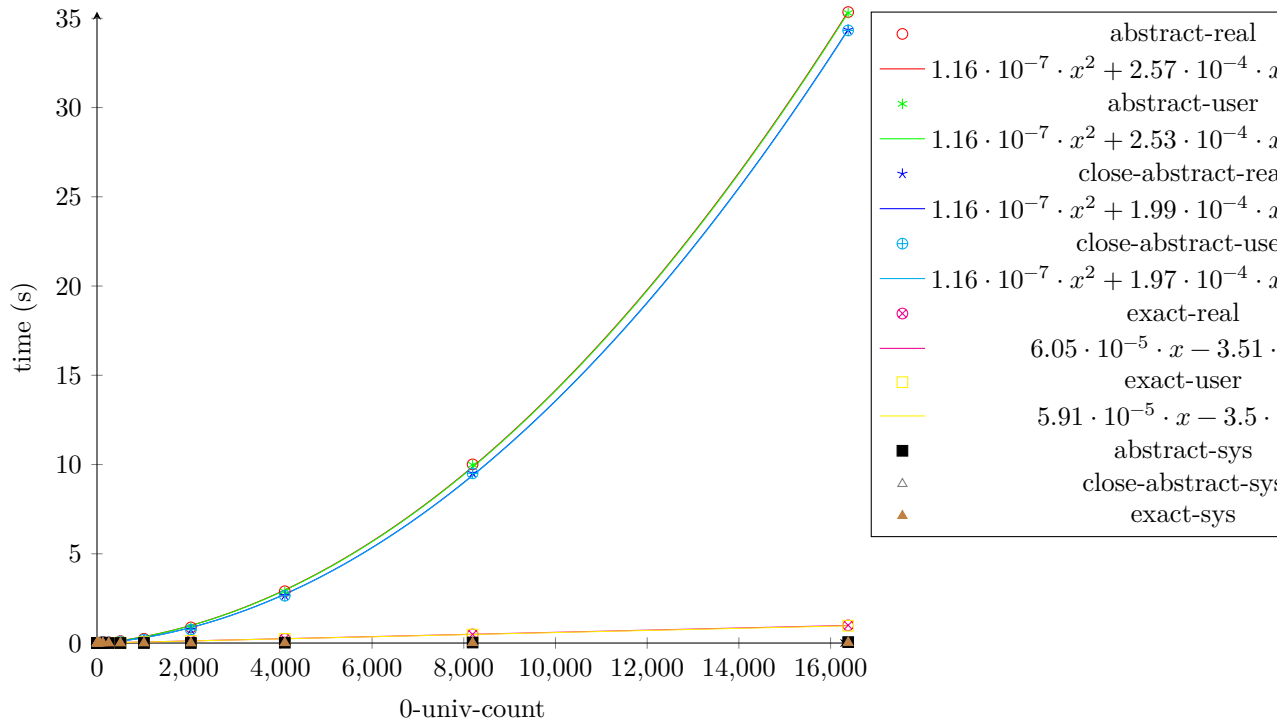Figure 1: timing-pattern

1

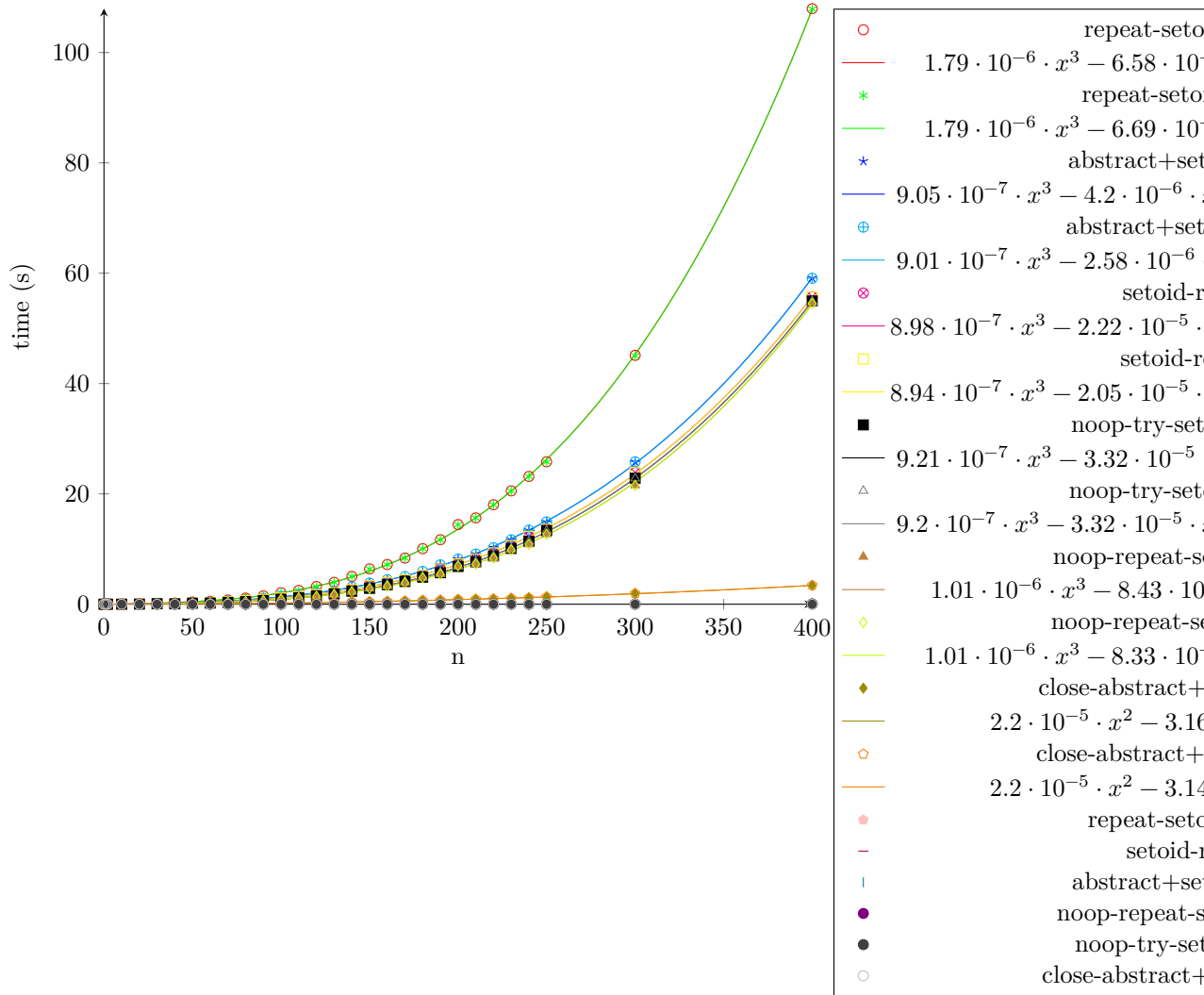Figure 2: timing-n-polymorphic-universes param-1-n 0

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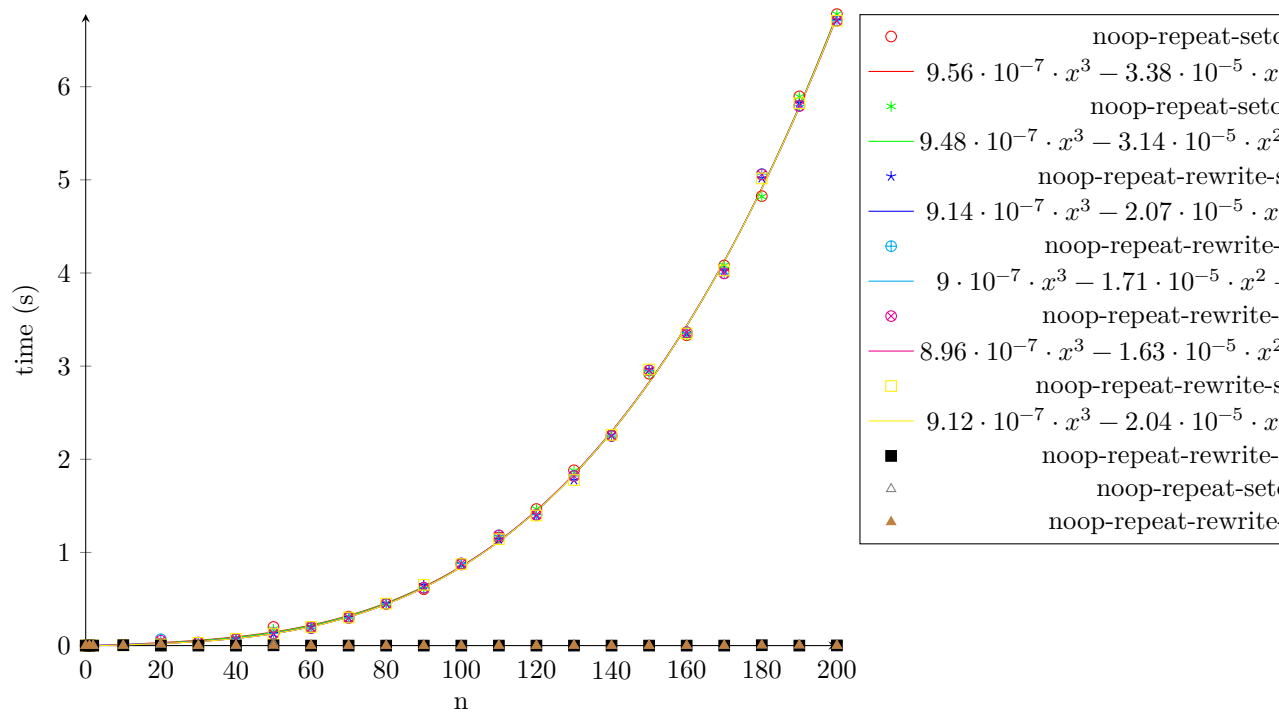
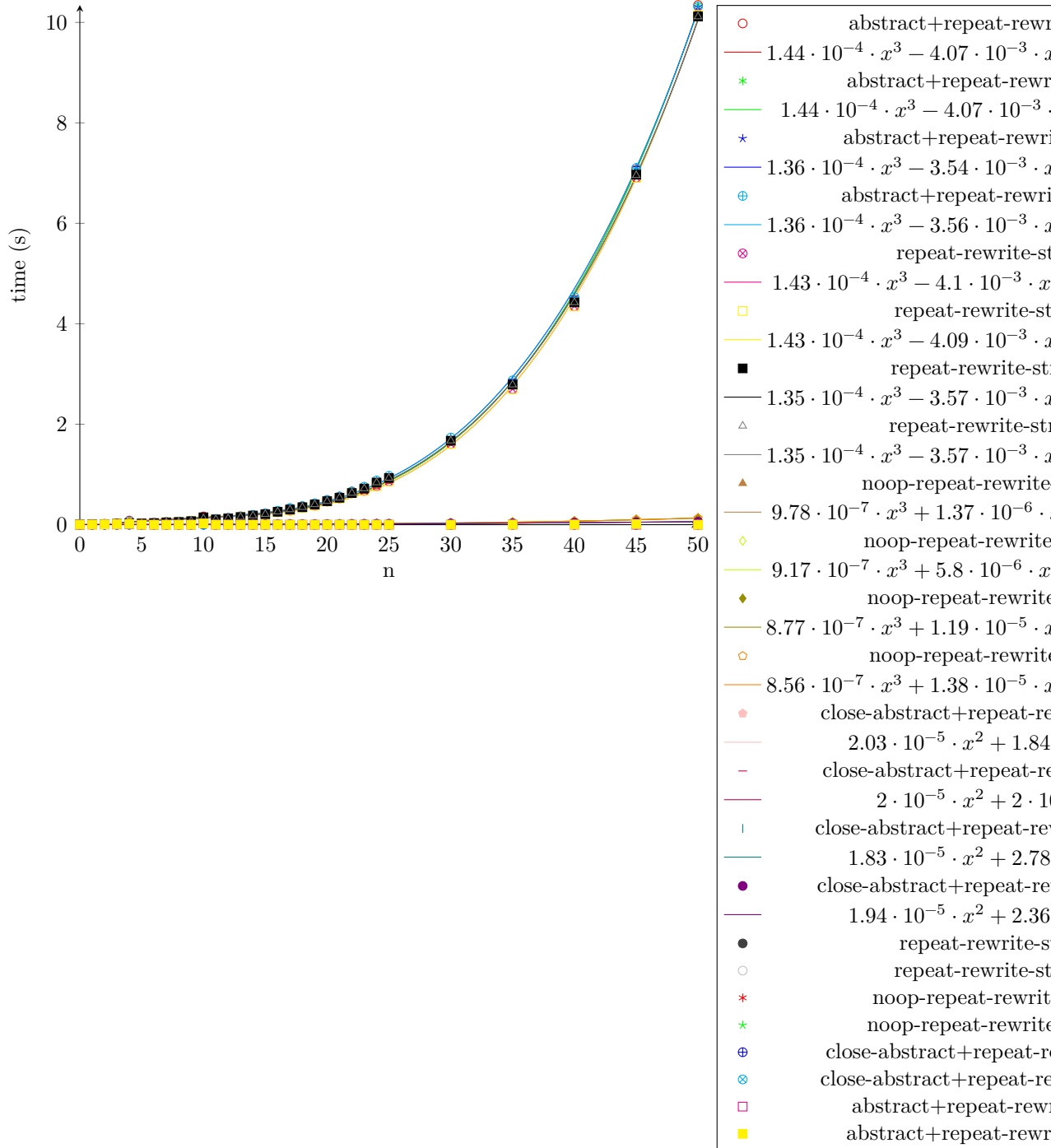Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

4

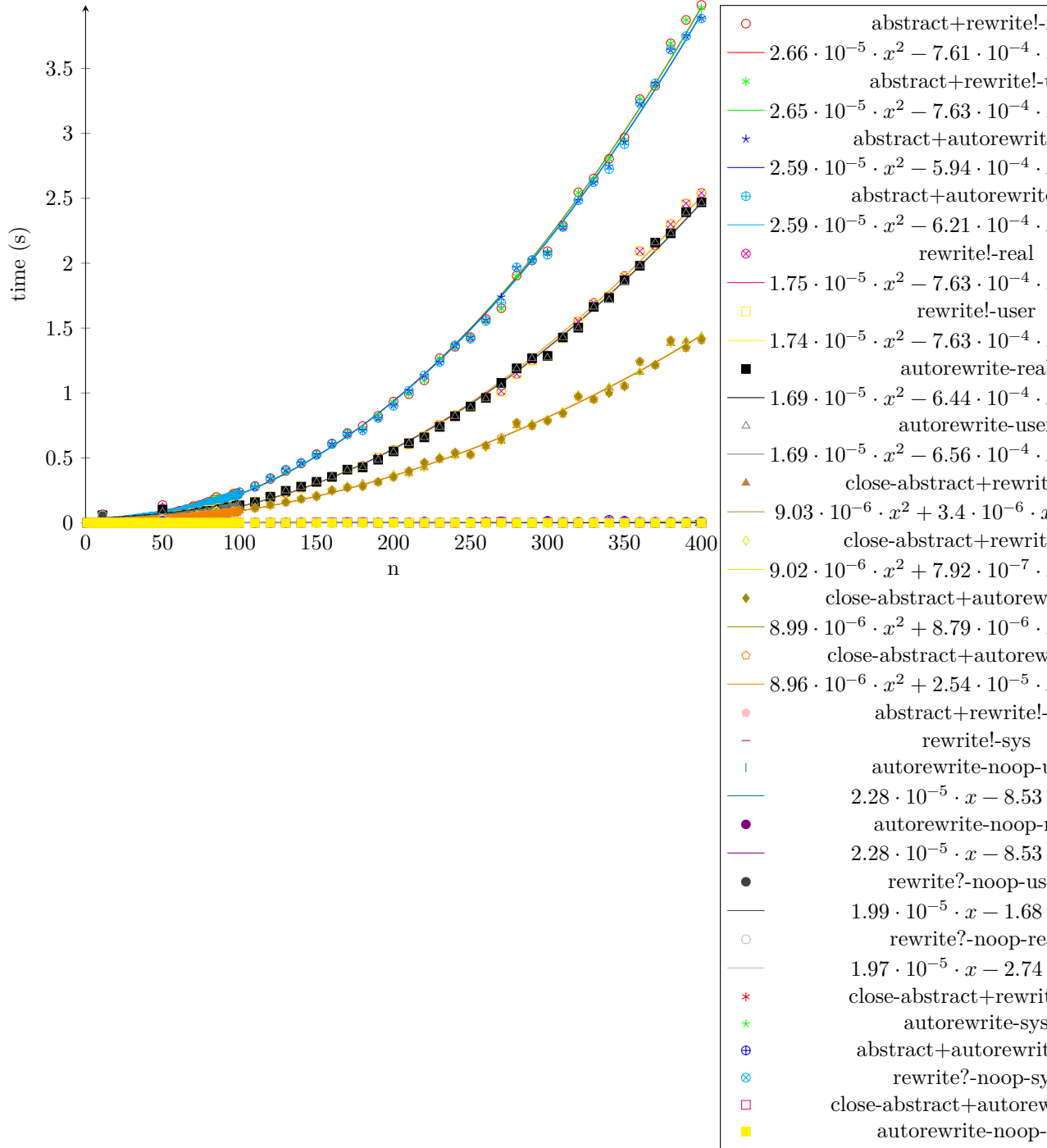Figure 5: timing-rewrite-strat-under-binders

time (s)

3.5

3

2.5

2

1.5

1

0.5

0

0   50   100   150   200   250   300   350   400

n

	abstract+rewrite!-
——	$2.66 \cdot 10^{-5} \cdot x^2 - 7.61 \cdot 10^{-4} \cdot$
*	abstract+rewrite!-u
——	$2.65 \cdot 10^{-5} \cdot x^2 - 7.63 \cdot 10^{-4} \cdot$
*	abstract+autorewrit
——	$2.59 \cdot 10^{-5} \cdot x^2 - 5.94 \cdot 10^{-4} \cdot$
⊕	abstract+autorewrit
——	$2.59 \cdot 10^{-5} \cdot x^2 - 6.21 \cdot 10^{-4} \cdot$
⊗	rewrite!-real
——	$1.75 \cdot 10^{-5} \cdot x^2 - 7.63 \cdot 10^{-4} \cdot$
□	rewrite!-user
——	$1.74 \cdot 10^{-5} \cdot x^2 - 7.63 \cdot 10^{-4} \cdot$
■	autorewrite-rea
——	$1.69 \cdot 10^{-5} \cdot x^2 - 6.44 \cdot 10^{-4} \cdot$
△	autorewrite-user
——	$1.69 \cdot 10^{-5} \cdot x^2 - 6.56 \cdot 10^{-4} \cdot$
▲	close-abstract+rewrit
——	$9.03 \cdot 10^{-6} \cdot x^2 + 3.4 \cdot 10^{-6} \cdot x$
◇	close-abstract+rewrit
——	$9.02 \cdot 10^{-6} \cdot x^2 + 7.92 \cdot 10^{-7} \cdot$
◆	close-abstract+autorew
——	$8.99 \cdot 10^{-6} \cdot x^2 + 8.79 \cdot 10^{-6} \cdot$
⬠	close-abstract+autorew
——	$8.96 \cdot 10^{-6} \cdot x^2 + 2.54 \cdot 10^{-5} \cdot$
⬠	abstract+rewrite!-
—	rewrite!-sys
		autorewrite-noop-u
——	$2.28 \cdot 10^{-5} \cdot x - 8.53$
●	autorewrite-noop-r
——	$2.28 \cdot 10^{-5} \cdot x - 8.53$
●	rewrite?-noop-us
——	$1.99 \cdot 10^{-5} \cdot x - 1.68$
○	rewrite?-noop-re
——	$1.97 \cdot 10^{-5} \cdot x - 2.74$
*	close-abstract+rewrit
*	autorewrite-sys
⊕	abstract+autorewrit
⊗	rewrite?-noop-sy
□	close-abstract+autorew
■	autorewrite-noop-

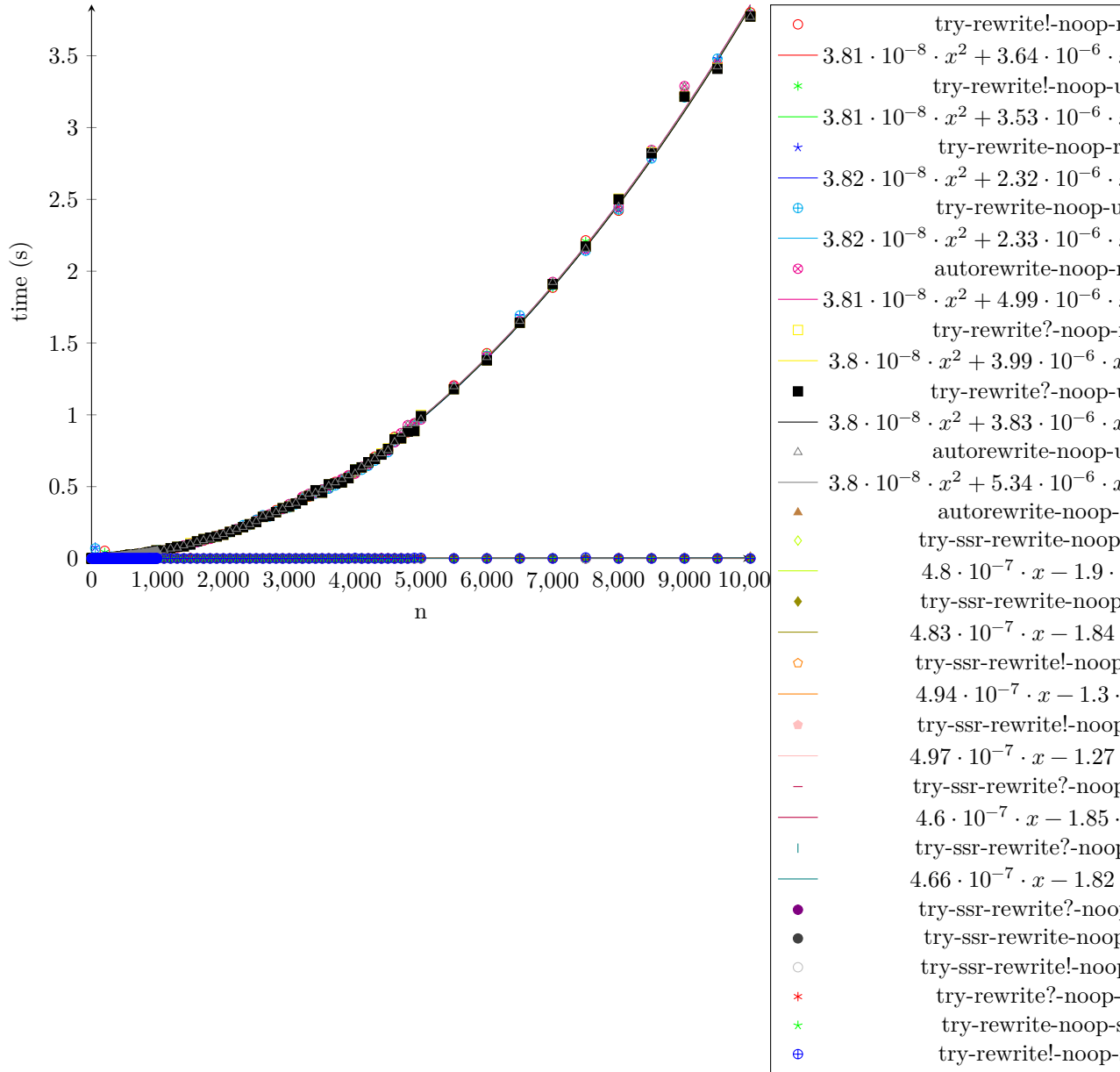Figure 6: timing-rewrite-repeated-app-autorewrite

6

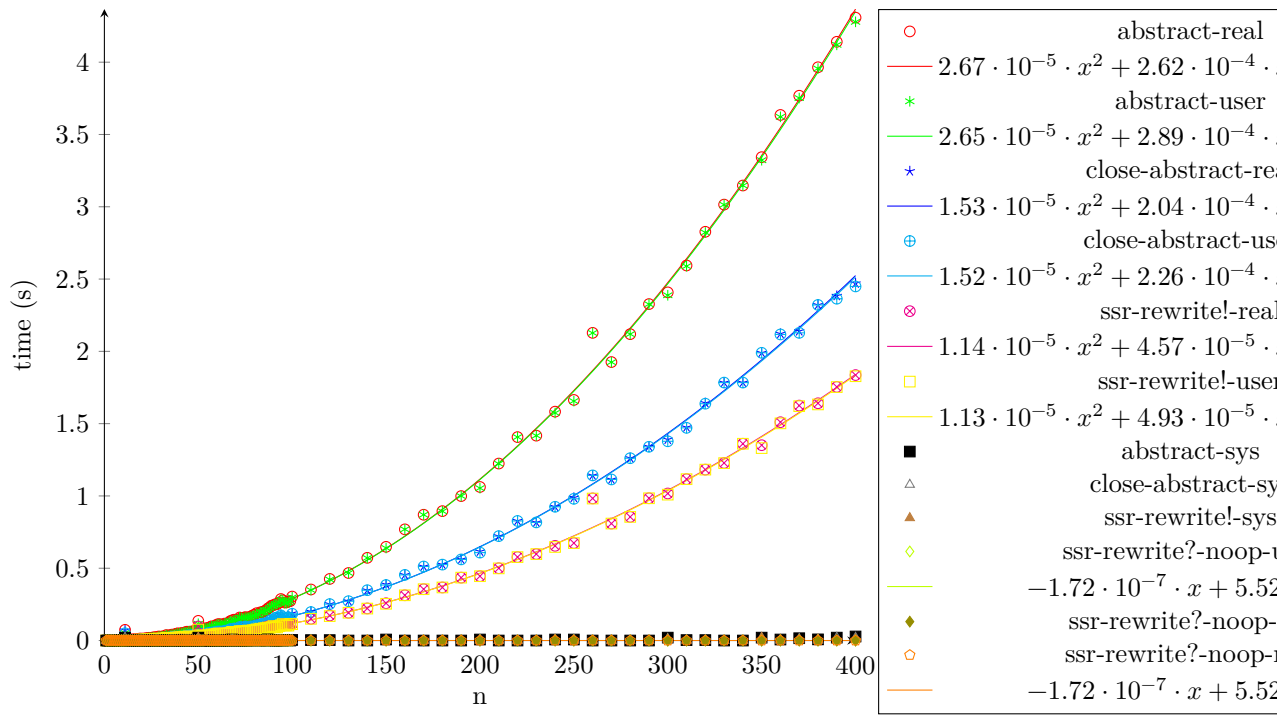Figure 7: timing-rewrite-repeated-app-autorewrite-noop

7

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

8
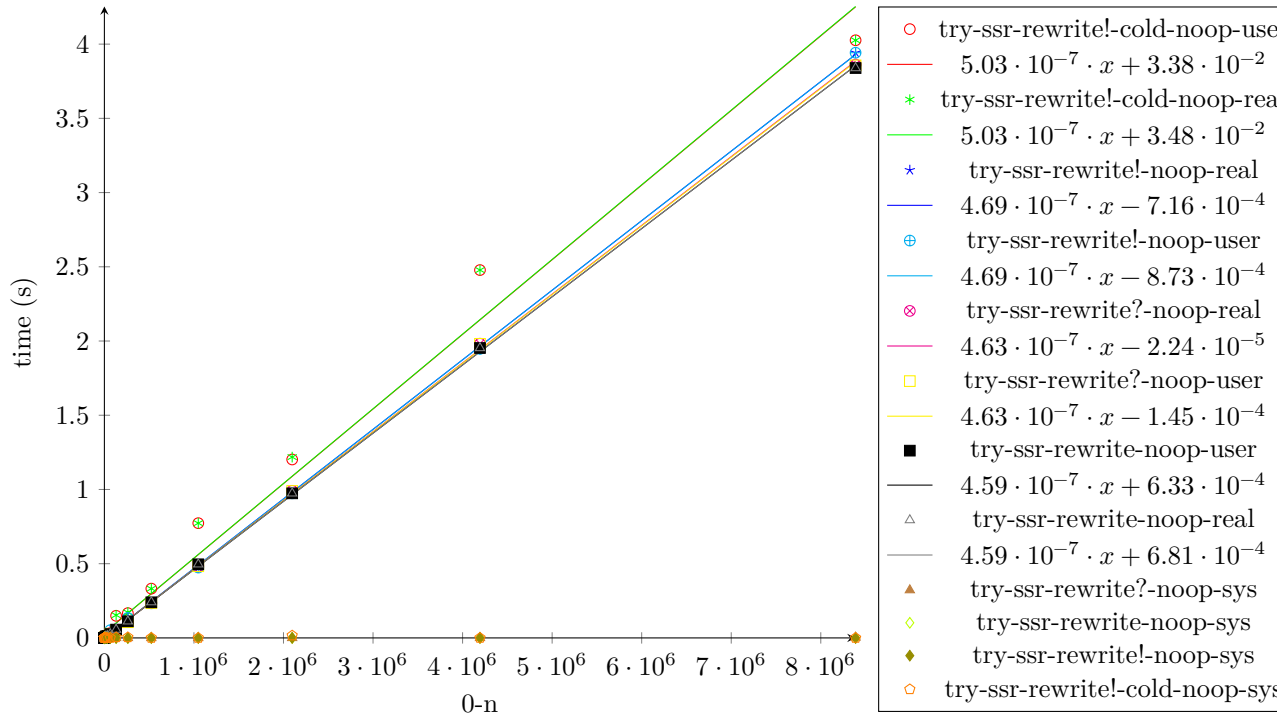
Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn 1
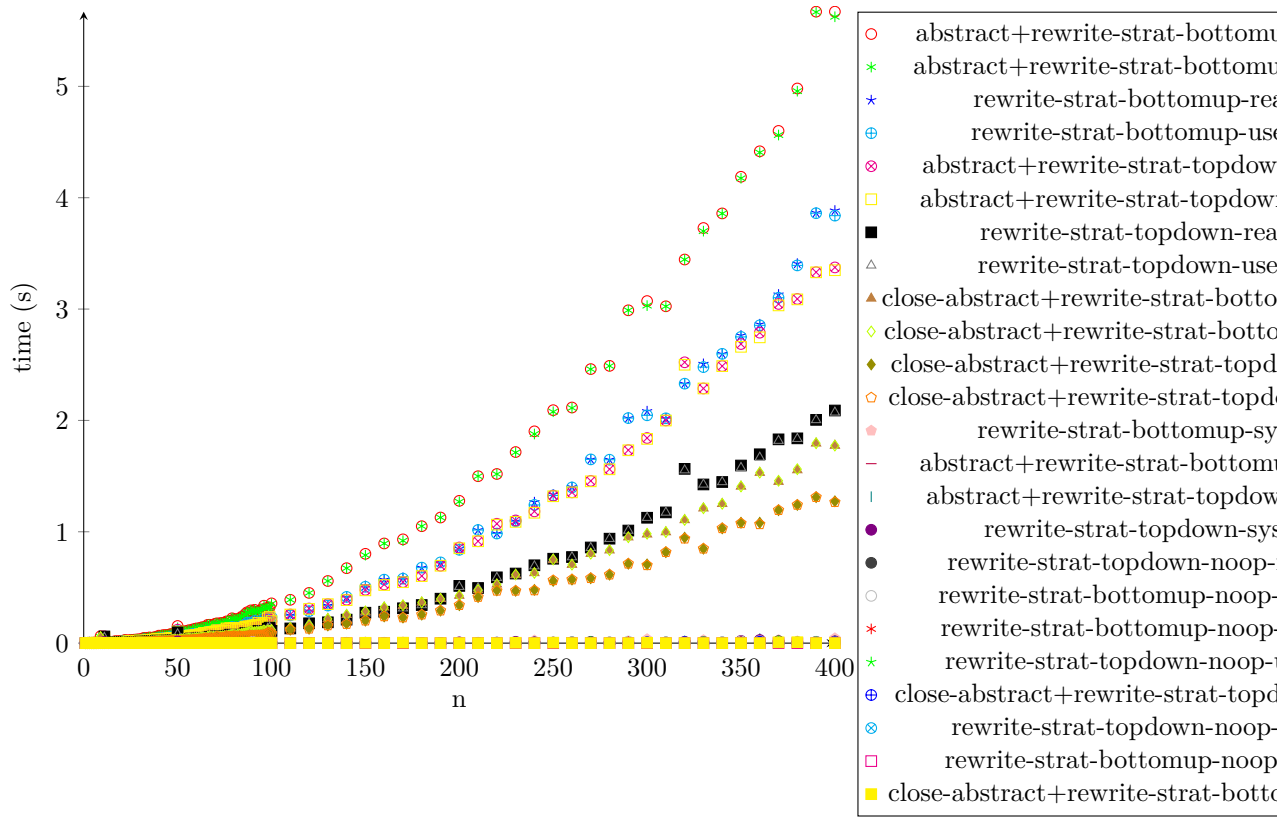
Figure 10: timing-rewrite-repeated-app-rewrite-strat
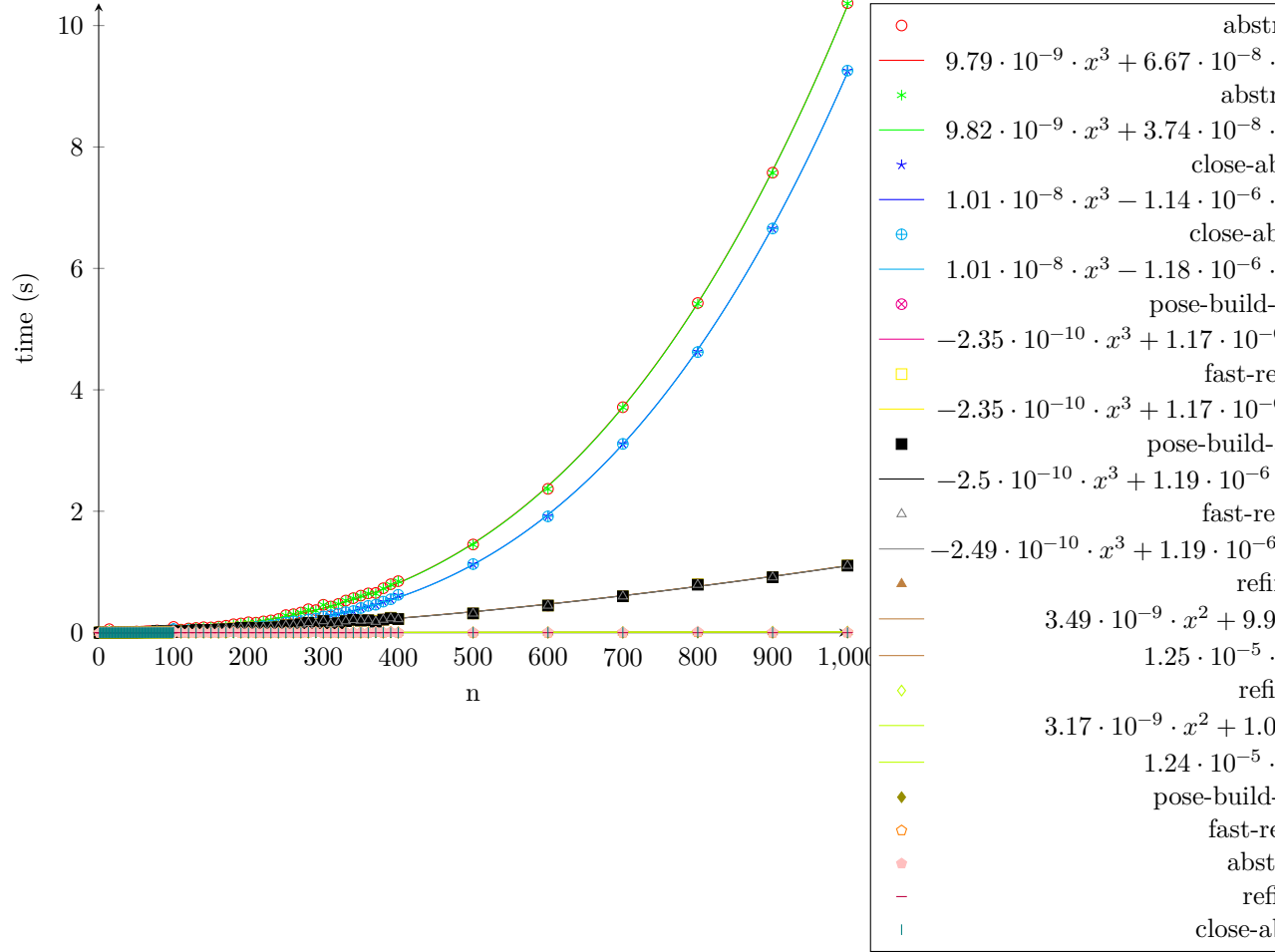
Figure 11: timing-rewrite-repeated-app-fast-rewrite

time (s)

20

15

10

5

0

0   500 1,000 1,500 2,000 2,500 3,000 3,500 4,000 4,500 5,000

n

Legend:

○ pose-build-a
$1.72 \cdot 10^{-11} \cdot x^3 + 7.94 \cdot 10^{-7} \cdot$
✳ fast-rew
$1.72 \cdot 10^{-11} \cdot x^3 + 7.94 \cdot 10^{-7} \cdot$
✴ pose-build-a
$1.36 \cdot 10^{-11} \cdot x^3 + 8 \cdot 10^{-7} \cdot x$
⊕ fast-rew
$1.36 \cdot 10^{-11} \cdot x^3 + 8 \cdot 10^{-7} \cdot x$
⊗ pose-build-a
□ fast-rew
■ refin
$6.68 \cdot 10^{-10} \cdot x^2 + 1.$
$1.41 \cdot 10^{-5} \cdot$
△ refin
$5.03 \cdot 10^{-10} \cdot x^2 + 1.23$
$1.39 \cdot 10^{-5} \cdot$
▲ refin

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

time (s) vs n

abstract-real
$2.85 \cdot 10^{-6} \cdot x^2 - 1.75 \cdot 10^{-3}$

abstract-user
$2.85 \cdot 10^{-6} \cdot x^2 - 1.75 \cdot 10^{-3}$

fast-rewrite-real
$2.56 \cdot 10^{-6} \cdot x^2 - 1.78 \cdot 10^{-3}$

fast-rewrite-user
$2.55 \cdot 10^{-6} \cdot x^2 - 1.78 \cdot 10^{-3}$

refine-user
$4.18 \cdot 10^{-7} \cdot x^2 - 3.8 \cdot 10^{-4} \cdot x$
$4.88 \cdot 10^{-4} \cdot x - 6.07 \cdot$

refine-real
$4.17 \cdot 10^{-7} \cdot x^2 - 3.79 \cdot 10^{-4} \cdot x$
$4.88 \cdot 10^{-4} \cdot x - 6.07 \cdot$

type-admit-cast-user
$4.08 \cdot 10^{-7} \cdot x^2 - 3.35 \cdot 10^{-4} \cdot x$
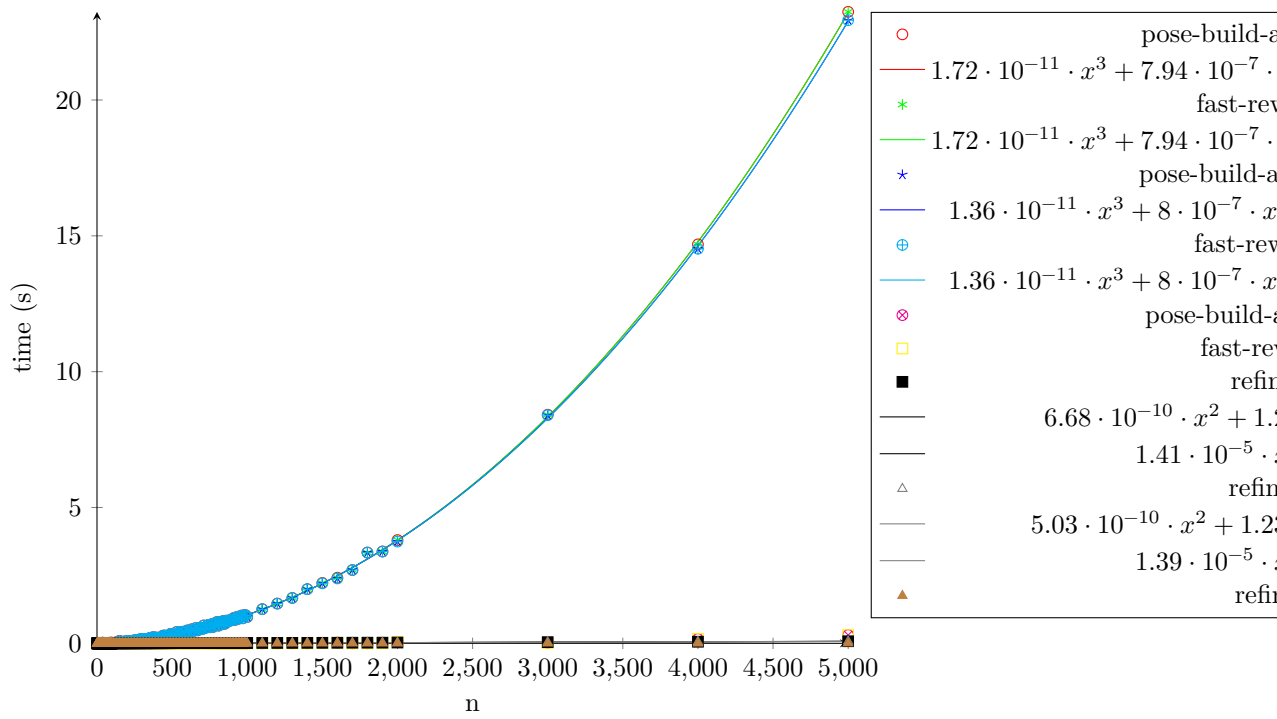
type-admit-cast-real
$4.08 \cdot 10^{-7} \cdot x^2 - 3.35 \cdot 10^{-4} \cdot x$

check-admit-cast-real
$3.86 \cdot 10^{-7} \cdot x^2 - 3.16 \cdot 10^{-4} \cdot x$

check-admit-cast-user
$3.86 \cdot 10^{-7} \cdot x^2 - 3.17 \cdot 10^{-4} \cdot x$

close-abstract-user
$2.92 \cdot 10^{-7} \cdot x^2 + 2.99 \cdot 10^{-5} \cdot x$

close-abstract-real
$2.92 \cdot 10^{-7} \cdot x^2 + 3.01 \cdot 10^{-5} \cdot x$

type-admit-user
$3.69 \cdot 10^{-7} \cdot x^2 - 2.81 \cdot 10^{-4} \cdot x$

type-admit-real
$3.69 \cdot 10^{-7} \cdot x^2 - 2.81 \cdot 10^{-4} \cdot x$

type-pf-cast-user
$3.66 \cdot 10^{-7} \cdot x^2 - 2.74 \cdot 10^{-4} \cdot x$

type-pf-cast-real
$3.66 \cdot 10^{-7} \cdot x^2 - 2.73 \cdot 10^{-4} \cdot x$

check-pf-cast-user
$3.51 \cdot 10^{-7} \cdot x^2 - 2.64 \cdot 10^{-4} \cdot x$

check-pf-cast-real
$3.51 \cdot 10^{-7} \cdot x^2 - 2.64 \cdot 10^{-4} \cdot x$

check-admit-real
$2.57 \cdot 10^{-7} \cdot x^2 - 1.23 \cdot 10^{-4} \cdot x$

check-admit-user
$2.55 \cdot 10^{-7} \cdot x^2 - 1.21 \cdot 10^{-4} \cdot x$

build-eval-thunk-real
$1.16 \cdot 10^{-4} \cdot x - 5.64 \cdot$

build-thunk-real
$1.15 \cdot 10^{-4} \cdot x - 6.14 \cdot$

build-eval-thunk-user
$1.15 \cdot 10^{-4} \cdot x - 7.76 \cdot$

build-thunk-user
$1.14 \cdot 10^{-4} \cdot x - 8.7 \cdot$

check-1-user