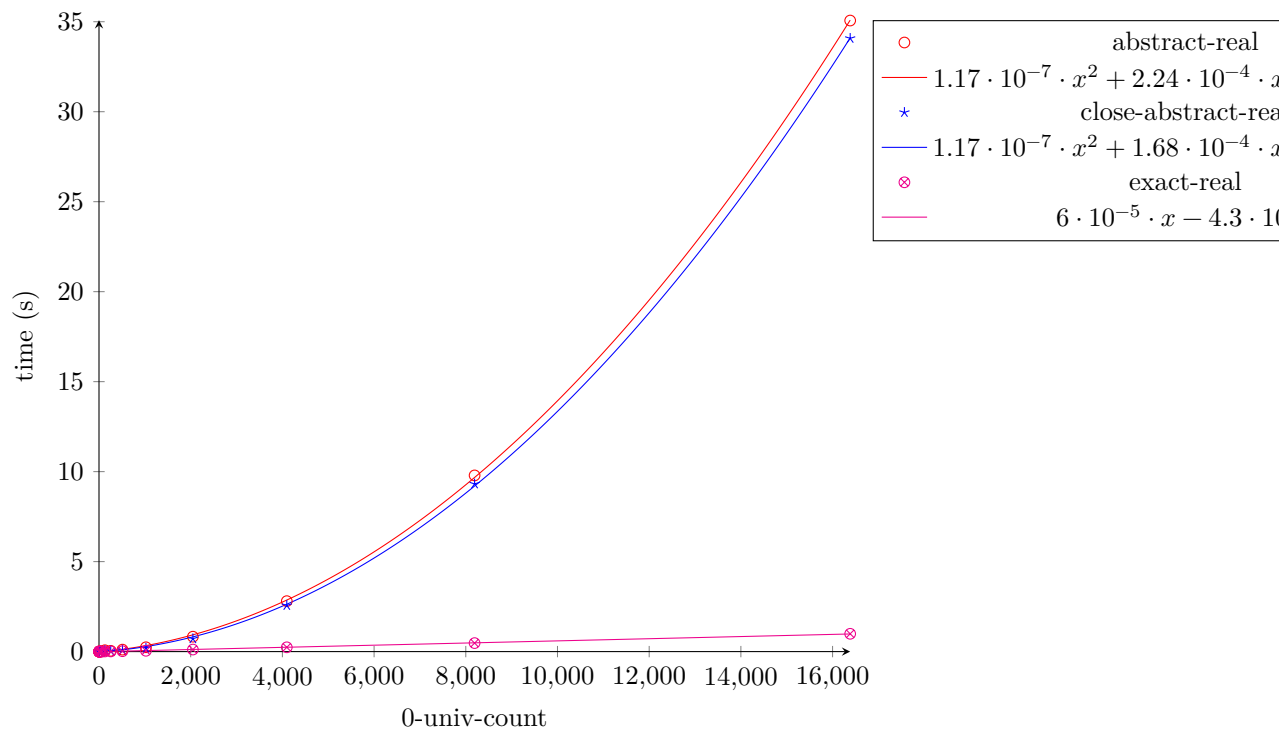Figure 1: timing-pattern

1

Figure 2: timing-n-polymorphic-universes param-1-n 0
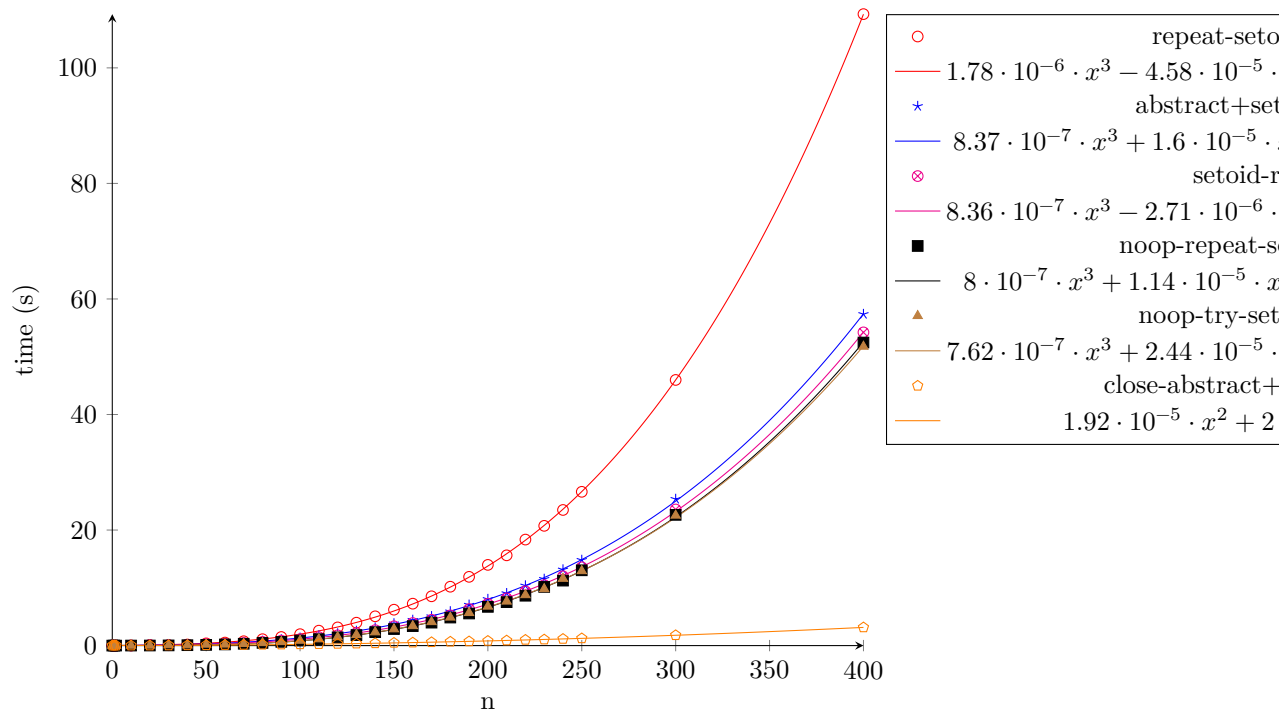
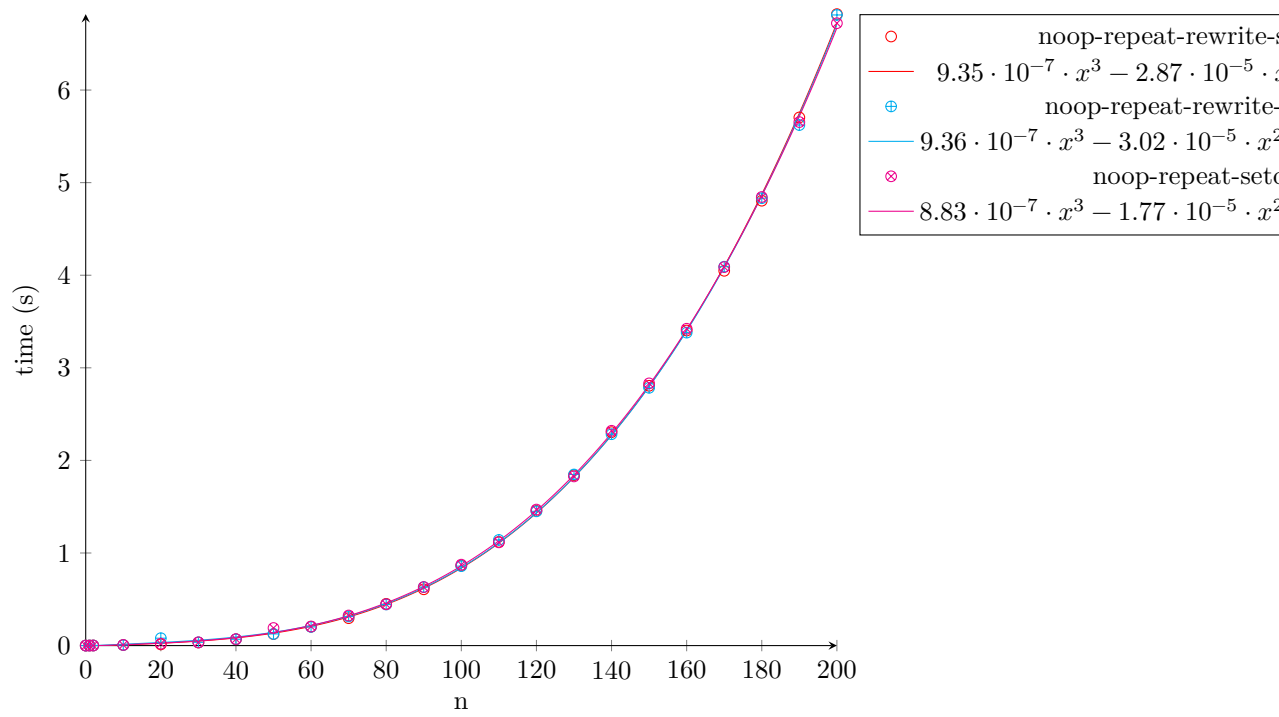Figure 3: timing-repeat-setoid-rewrite-under-binders

3

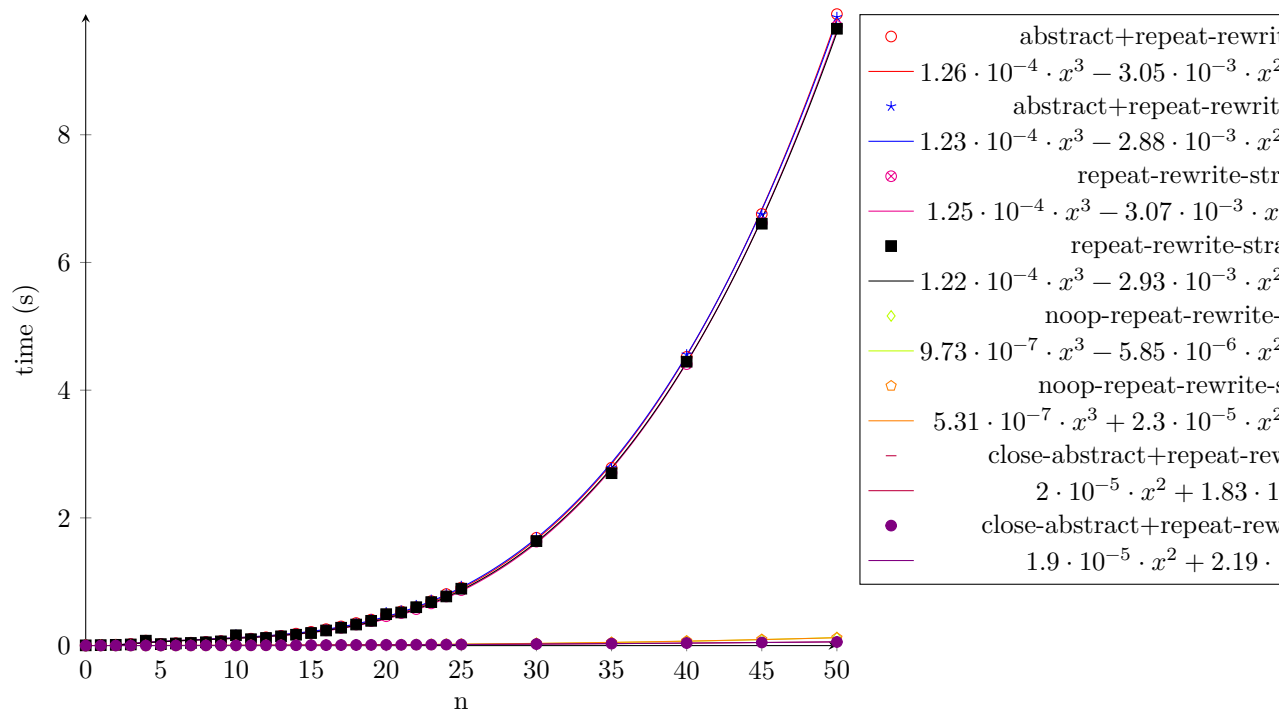Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

4

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

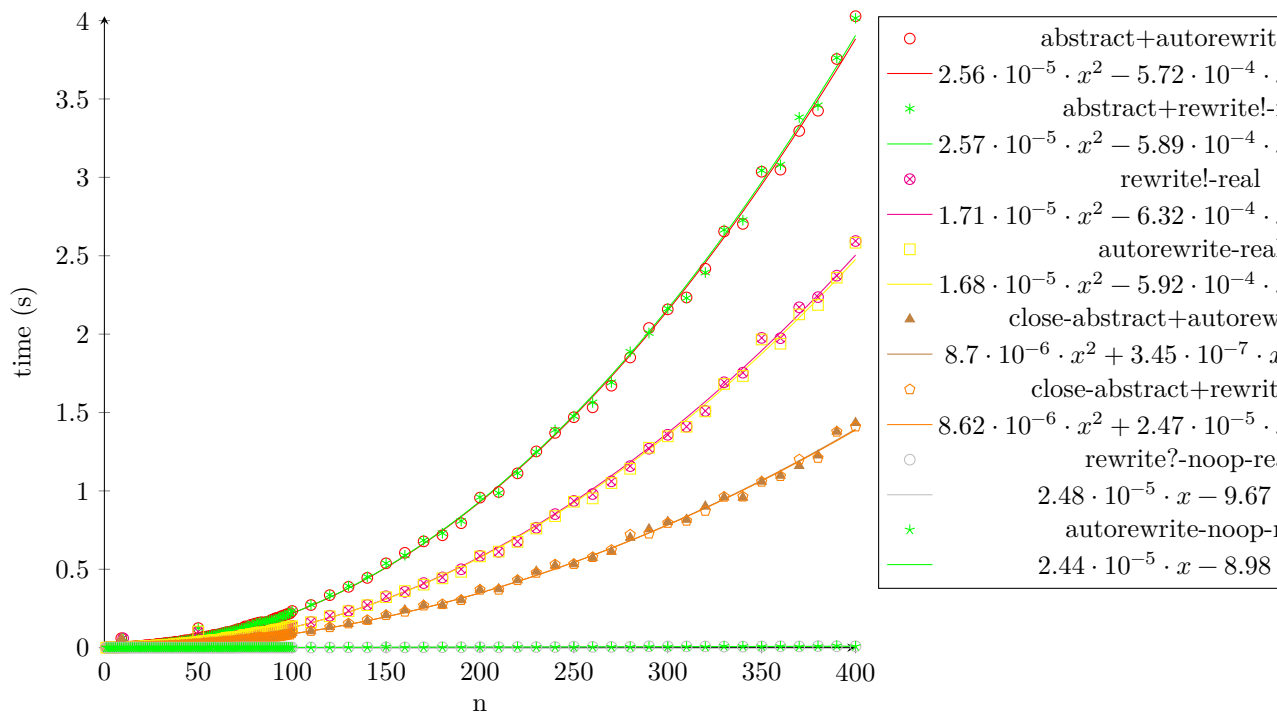Figure 6: timing-rewrite-repeated-app-autorewrite

Figure 7: timing-rewrite-repeated-app-autorewrite-noop
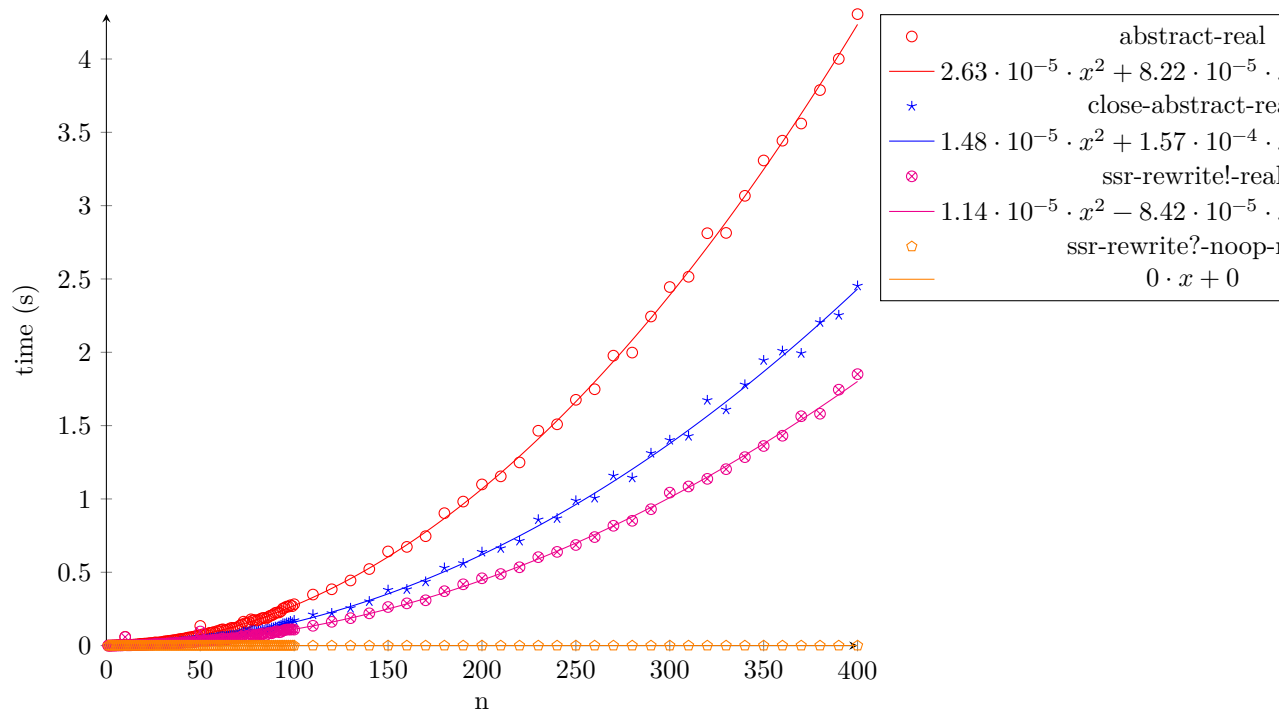
Figure 8: timing-rewrite-repeated-app-ssrrewrite

8

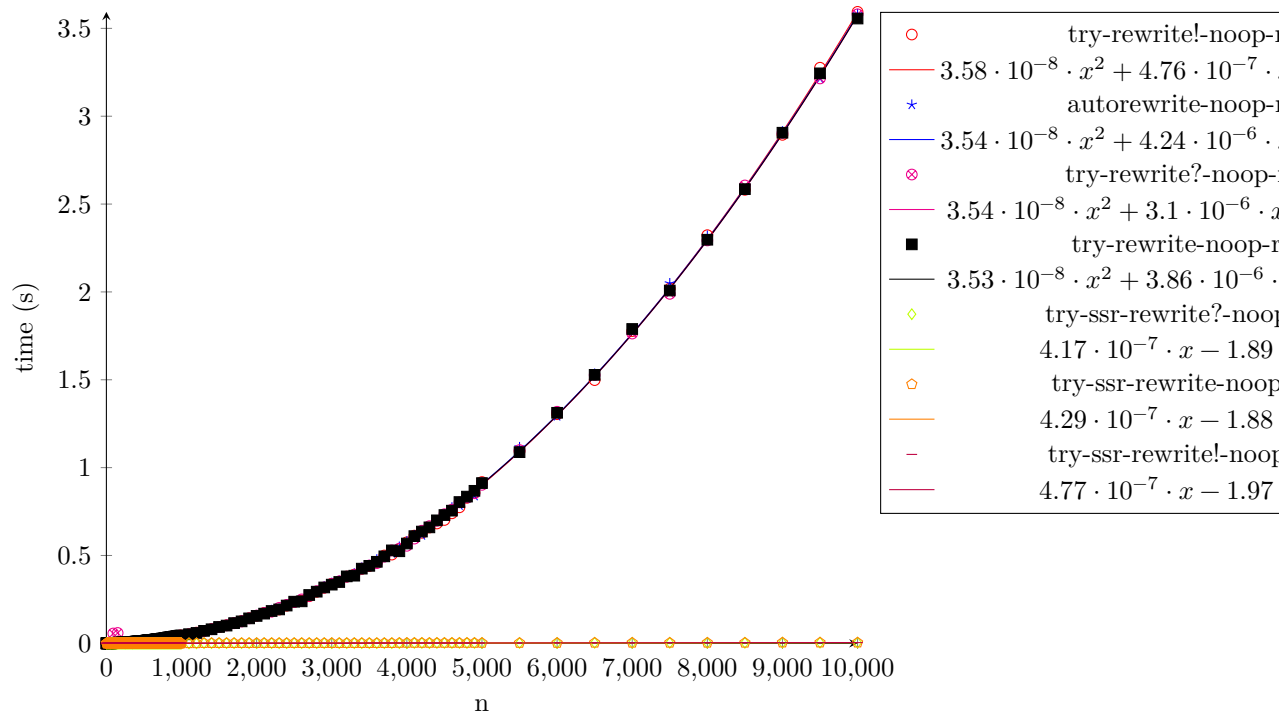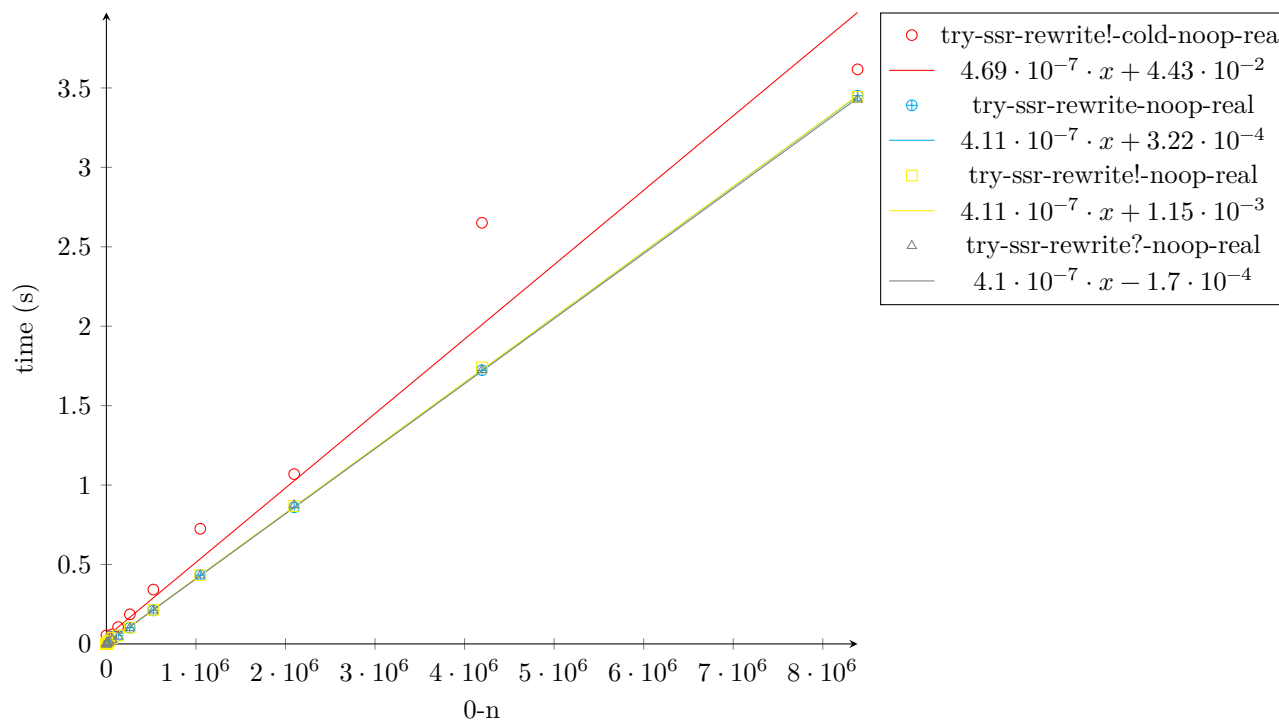Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn 1
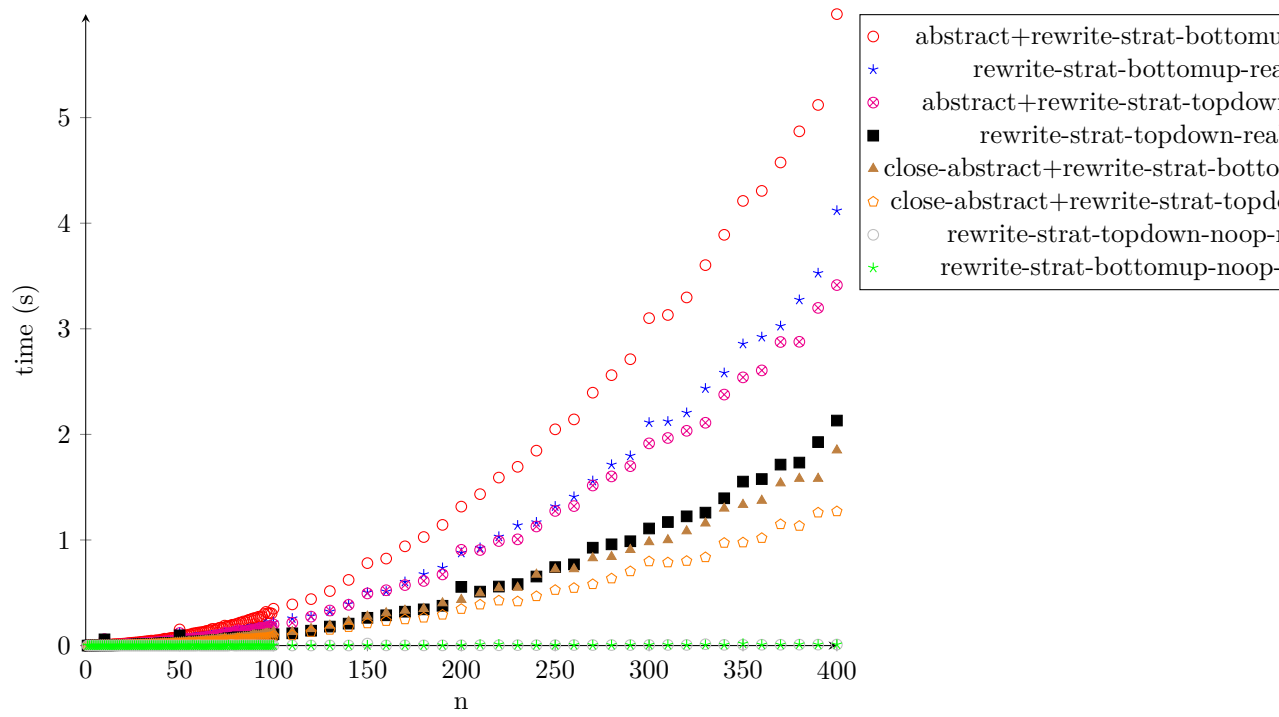
Figure 10: timing-rewrite-repeated-app-rewrite-strat
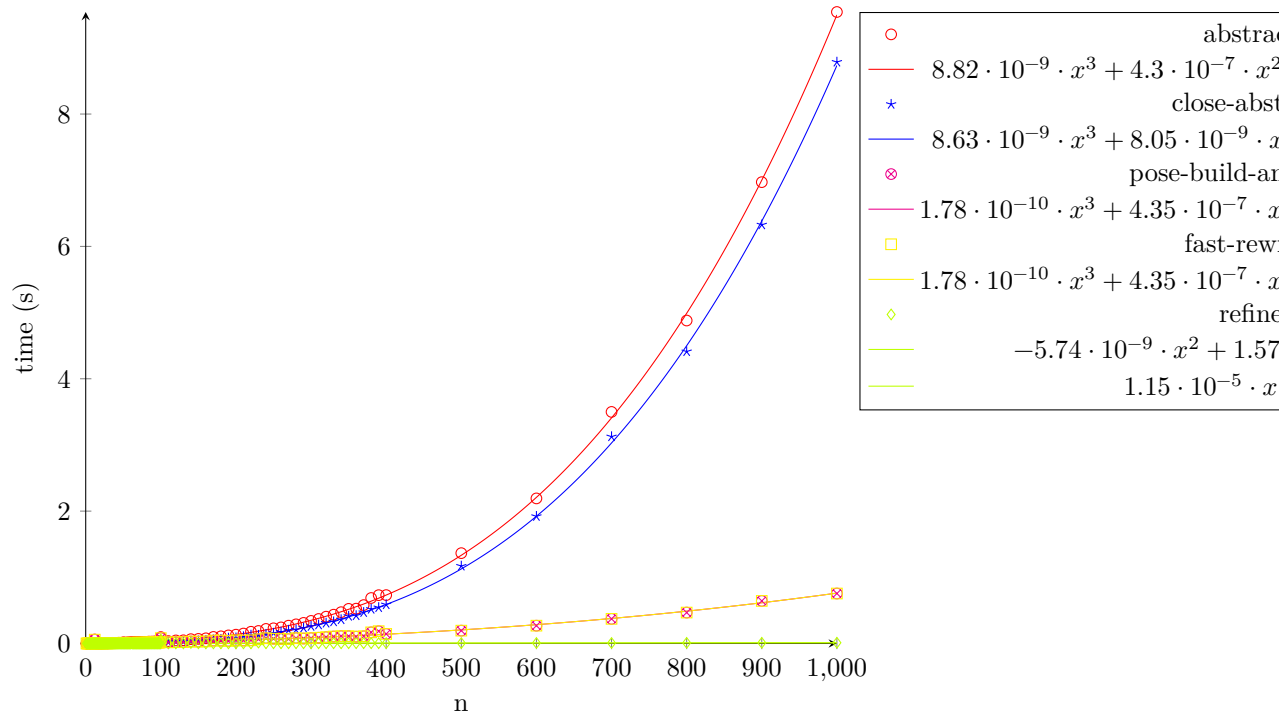
Figure 11: timing-rewrite-repeated-app-fast-rewrite

11
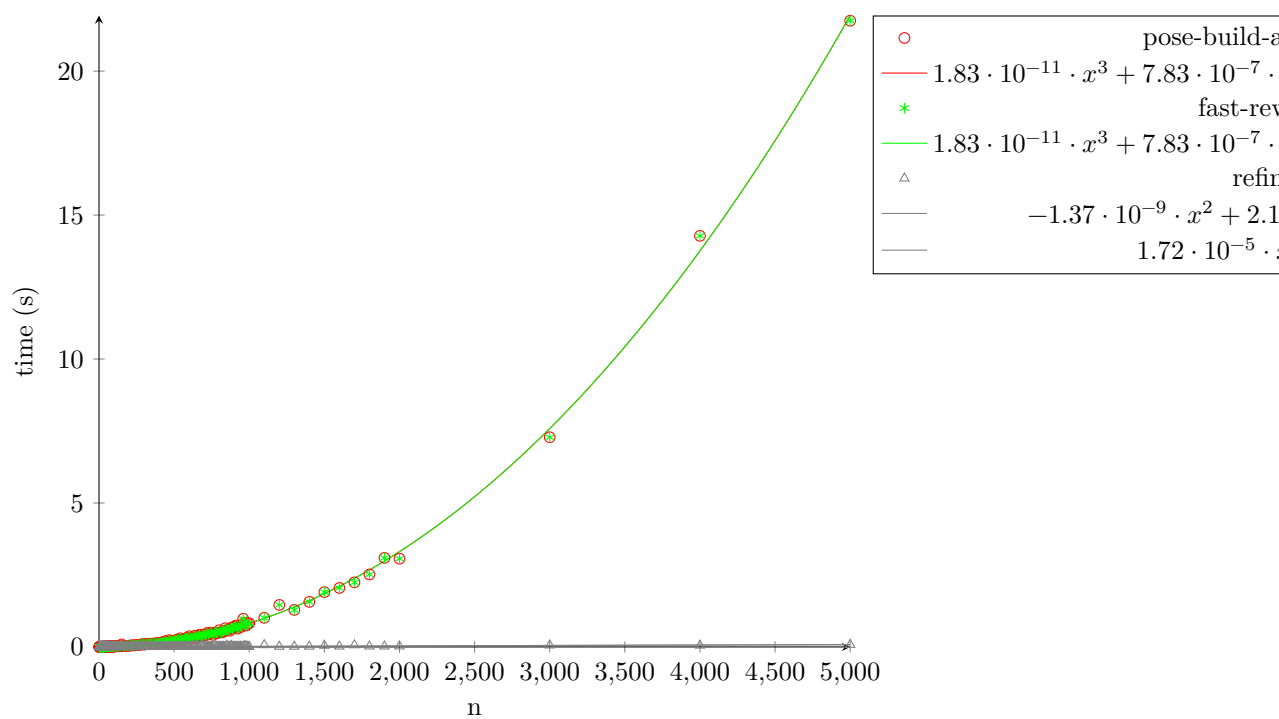
Figure 12: timing-rewrite-repeated-app-fast-rewrite-no-abstract
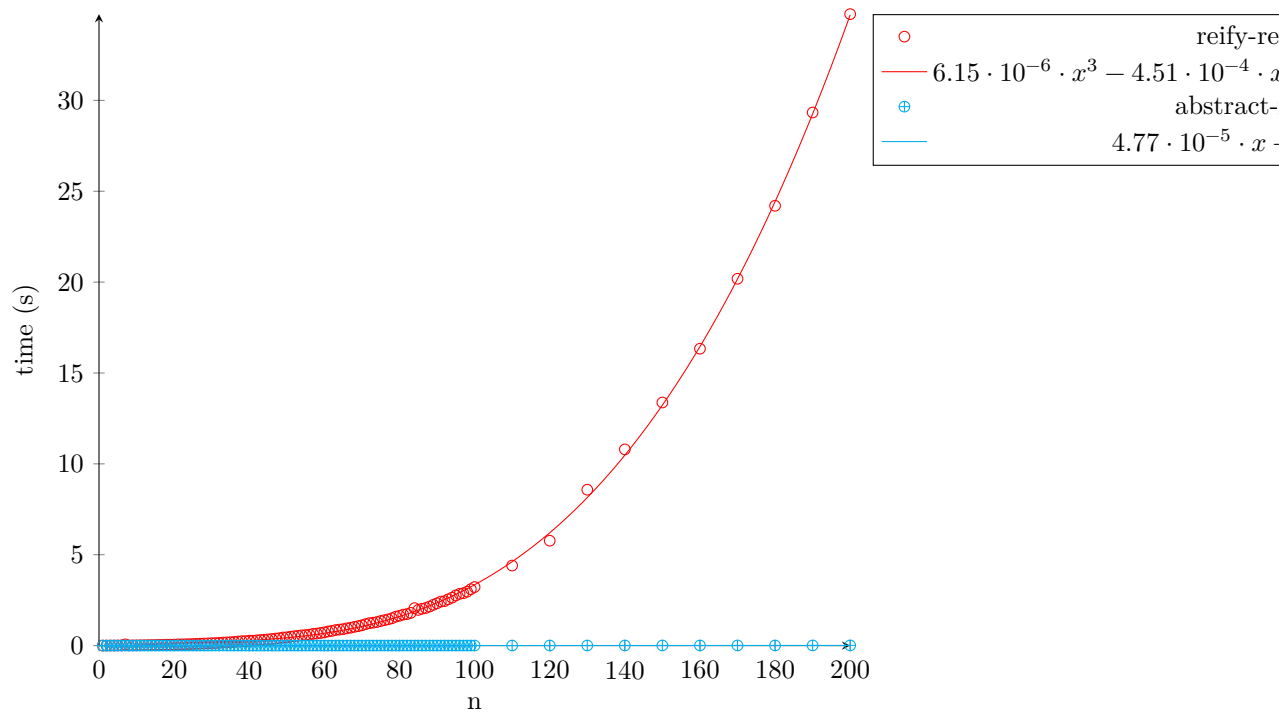
Figure 13: timing-typeclass-reification-let-in-HOAS
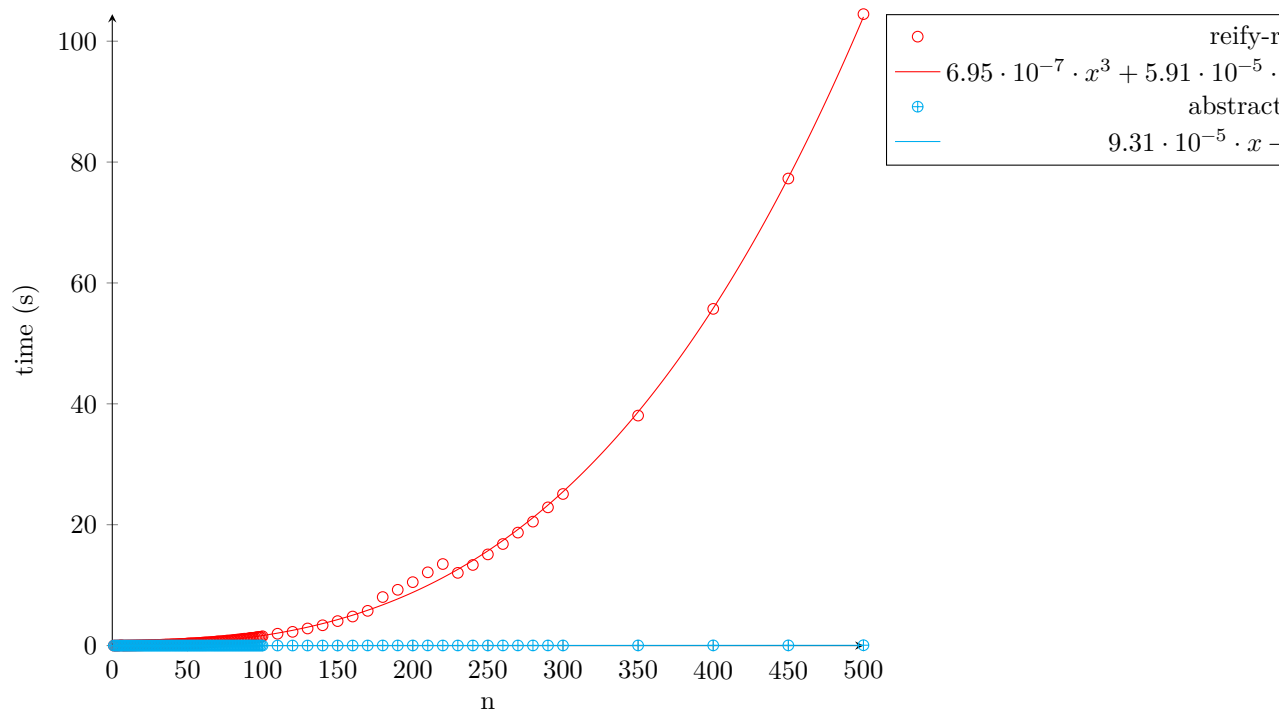
Figure 14: timing-typeclass-reification-let-in-PHOAS
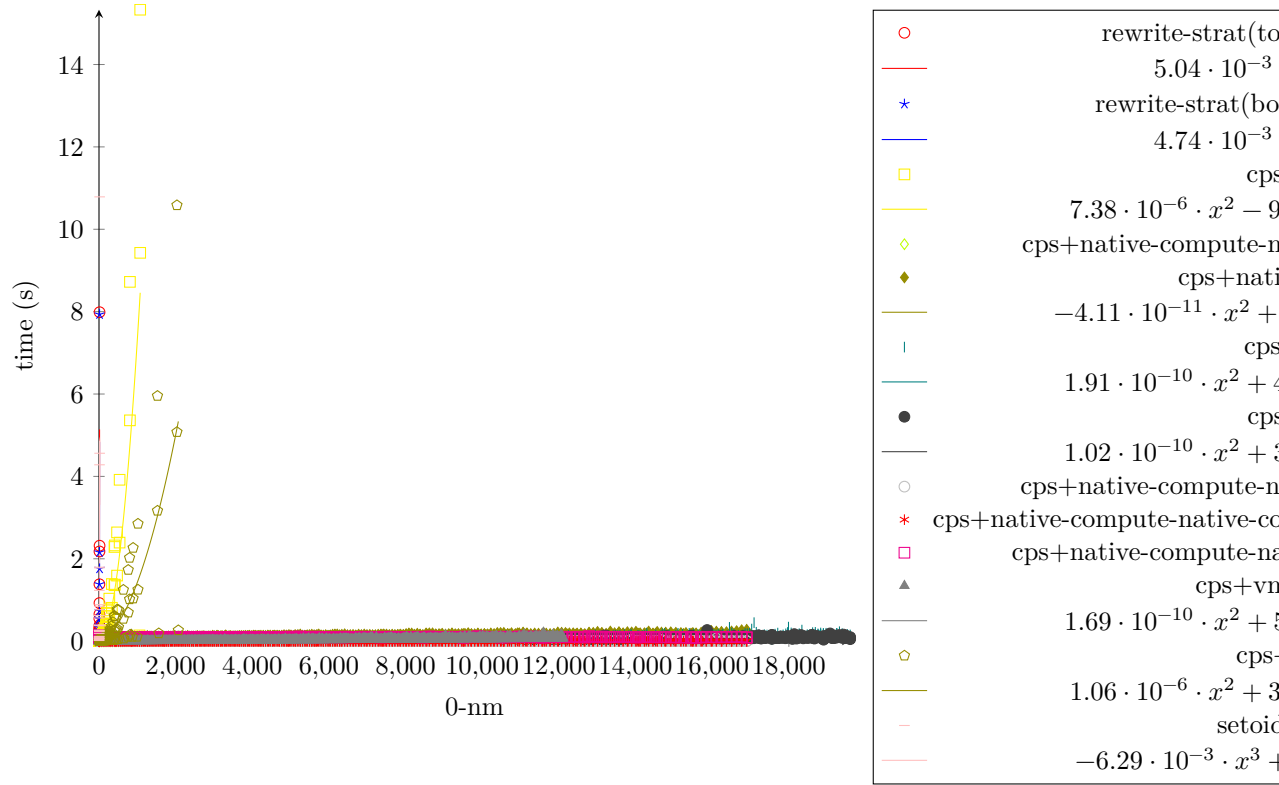
Figure 15: timing-rewrite-lift-lets-map param-1-n 1, param-2-m 1
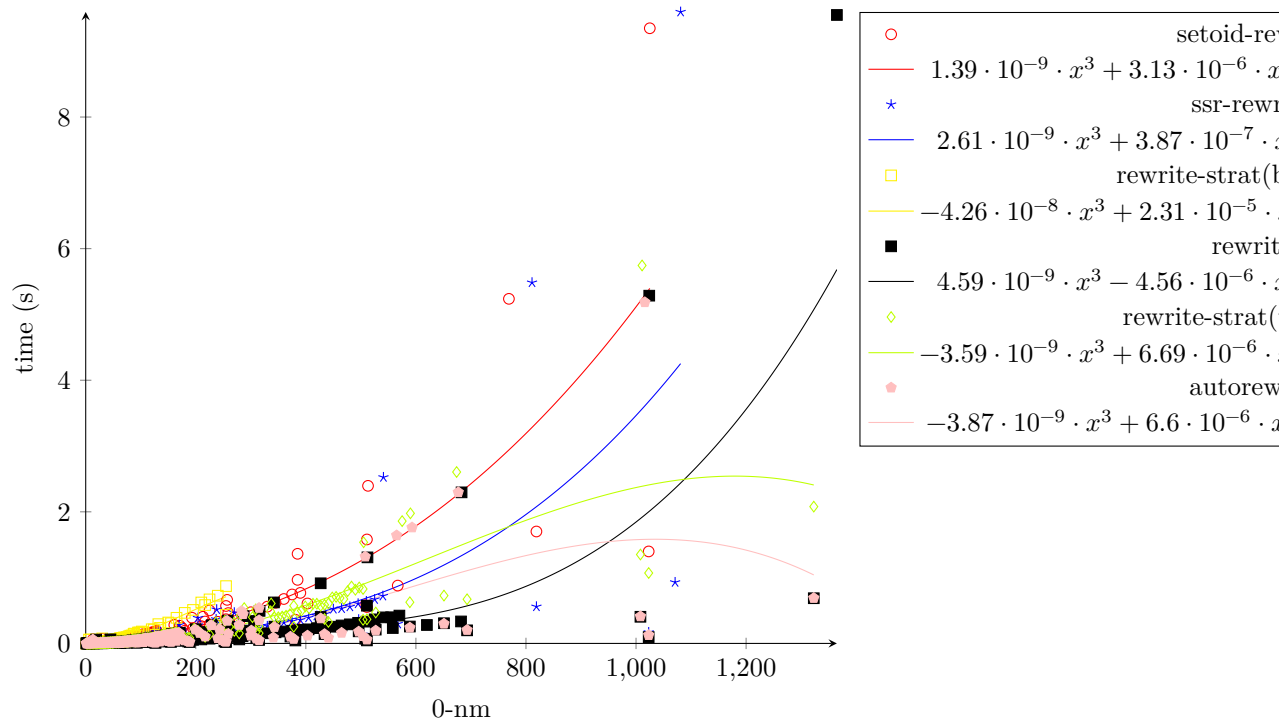
Figure 16: timing-rewrite-plus-0-tree param-1-n 0, param-2-m 1, param-3-input-size 5, param-4-output-size 3, param-5-num-rewrites 1

time (s)

12

10

8

6

4

2

0

0   5,000 10,000 15,000 20,000 25,000 30,000 35,000 40,000 45,000

n

sir

$2.17 \cdot 10^{-5} \cdot x^3 + 3.26 \cdot 10^{-4}$

cl

$2.14 \cdot 10^{-5} \cdot x^3 + 1.95 \cdot 10^{-4}$

la

$9 \cdot 10^{-7} \cdot x^2 - 8.26$

cl

$2.91 \cdot 10^{-7} \cdot x^2 + 5.$

vm-co

$1.95 \cdot 10^{-8} \cdot x^2 + 6.$

native-co

$2.39 \cdot 10^{-9} \cdot x^2 + 6.$

native-co

$2.39 \cdot 10^{-9} \cdot x^2 + 5.$

native-compute(2)-nat

native-compute(1)-nat

native-compute(1)-nati

native-compute(2)-nati

native-compute(1)-nat

native-compute(2)-nat

native-compute(1)-native-com

native-compute(2)-native-com

Figure 17: timing-sieve-of-eratosthenes

17
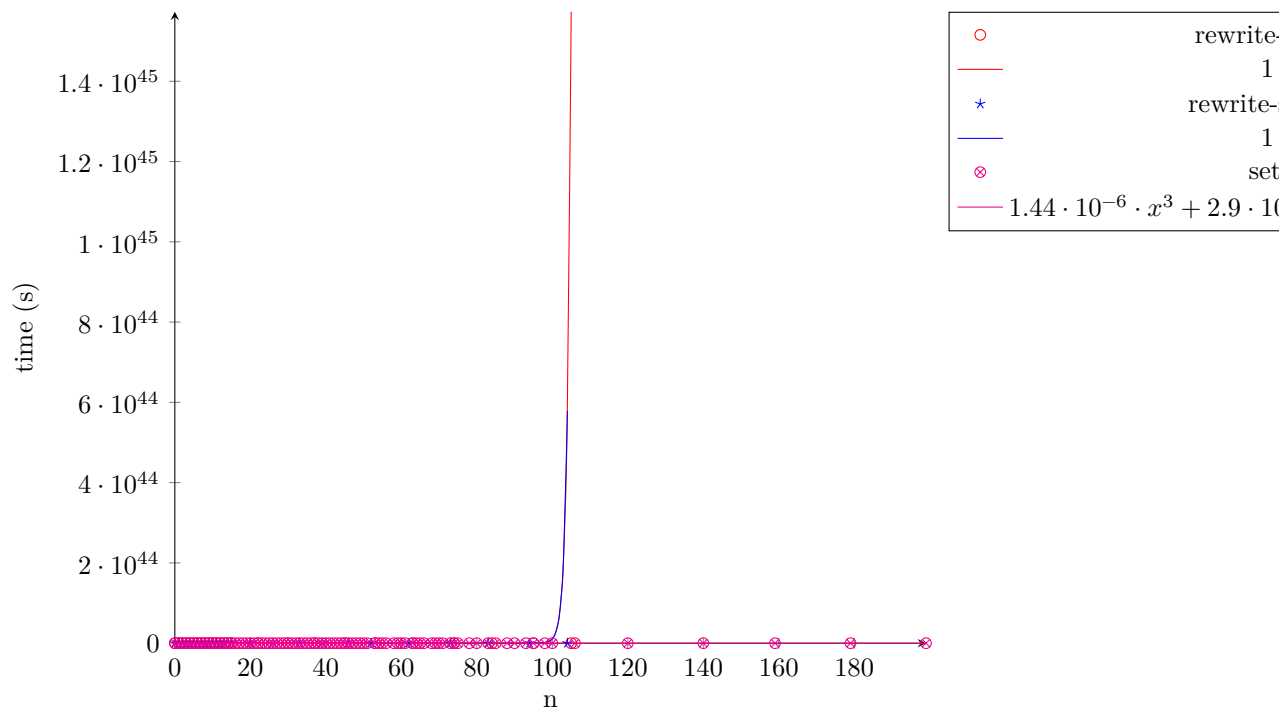
Figure 18: timing-rewrite-under-lets-plus-0

abstract-real
$2.45 \cdot 10^{-6} \cdot x^2 - 1.34 \cdot 10^{-3}$

fast-rewrite-real
$2.18 \cdot 10^{-6} \cdot x^2 - 1.38 \cdot 10^{-3}$

close-abstract-real
$2.72 \cdot 10^{-7} \cdot x^2 + 4.15 \cdot 10^{-5} \cdot x$

refine-real
$3.48 \cdot 10^{-7} \cdot x^2 - 2.68 \cdot 10^{-4} \cdot x$
$4.55 \cdot 10^{-4} \cdot x - 5.53$

type-admit-cast-real
$3.5 \cdot 10^{-7} \cdot x^2 - 2.73 \cdot 10^{-4} \cdot x$

type-pf-cast-real
$3.48 \cdot 10^{-7} \cdot x^2 - 2.82 \cdot 10^{-4} \cdot x$

type-admit-real
$3.46 \cdot 10^{-7} \cdot x^2 - 2.7 \cdot 10^{-4} \cdot x$

check-admit-real
$2.95 \cdot 10^{-7} \cdot x^2 - 2.15 \cdot 10^{-4} \cdot x$

check-admit-cast-real
$3.5 \cdot 10^{-7} \cdot x^2 - 2.89 \cdot 10^{-4} \cdot x$

check-pf-cast-real
$1.4 \cdot 10^{-7} \cdot x^2 + 5.21 \cdot 10^{-5} \cdot x$

build-eval-thunk-real
$1.04 \cdot 10^{-4} \cdot x + 6.19$

build-thunk-real
$1.03 \cdot 10^{-4} \cdot x - 3.07$

check-I-real
$1.78 \cdot 10^{-5} \cdot x - 4.89$

type-I-real
$1.89 \cdot 10^{-5} \cdot x - 5.04$

build-admit-real
$8.01 \cdot 10^{-6} \cdot x - 5.21$

build-pf-cast-real
$7.27 \cdot 10^{-6} \cdot x - 4.25$

build-admit-cast-real
$7.12 \cdot 10^{-6} \cdot x - 3.91$

build-I-real
$7.54 \cdot 10^{-6} \cdot x - 3.32$
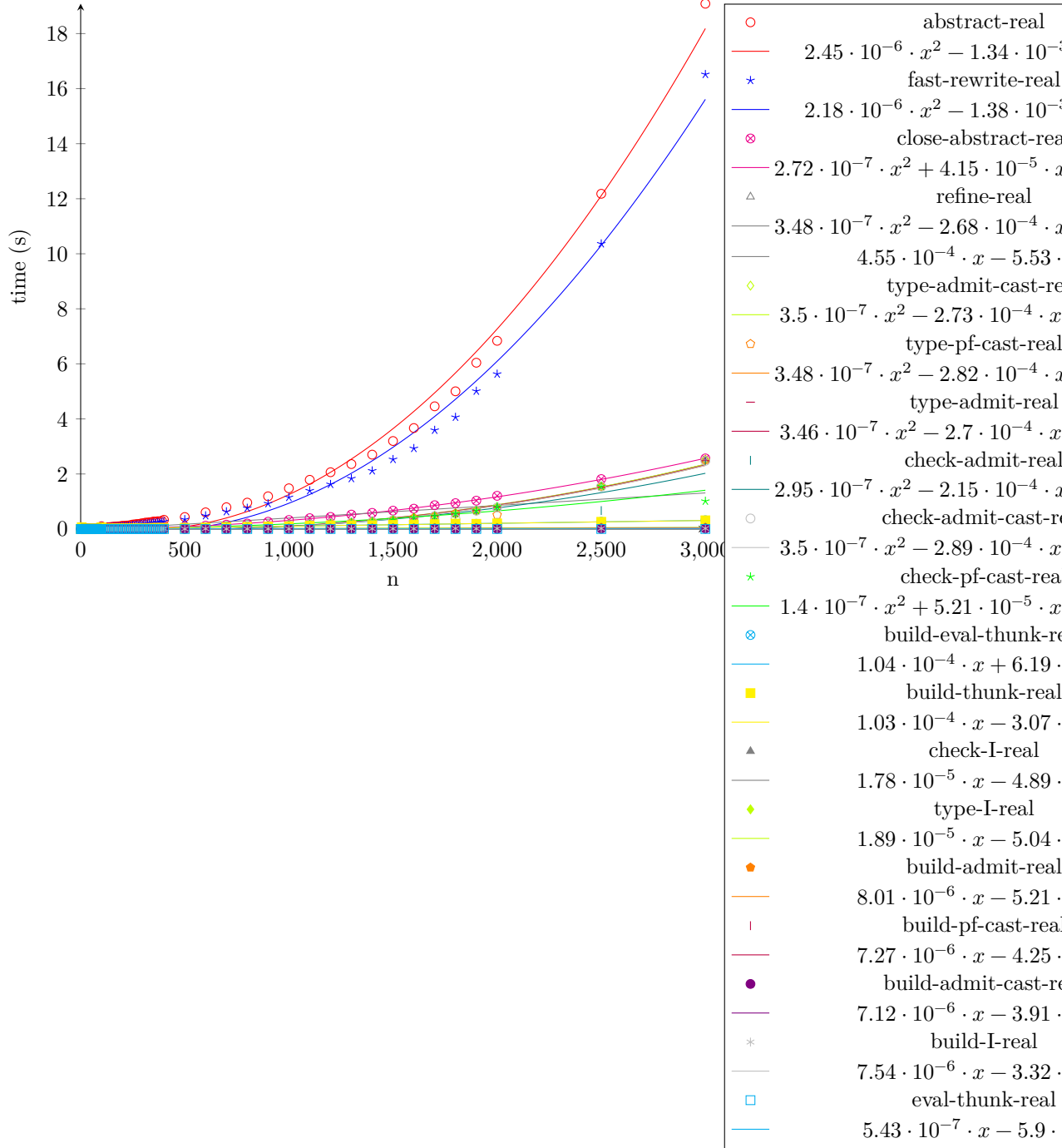
eval-thunk-real
$5.43 \cdot 10^{-7} \cdot x - 5.9$

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