

Figure 1: timing-pattern

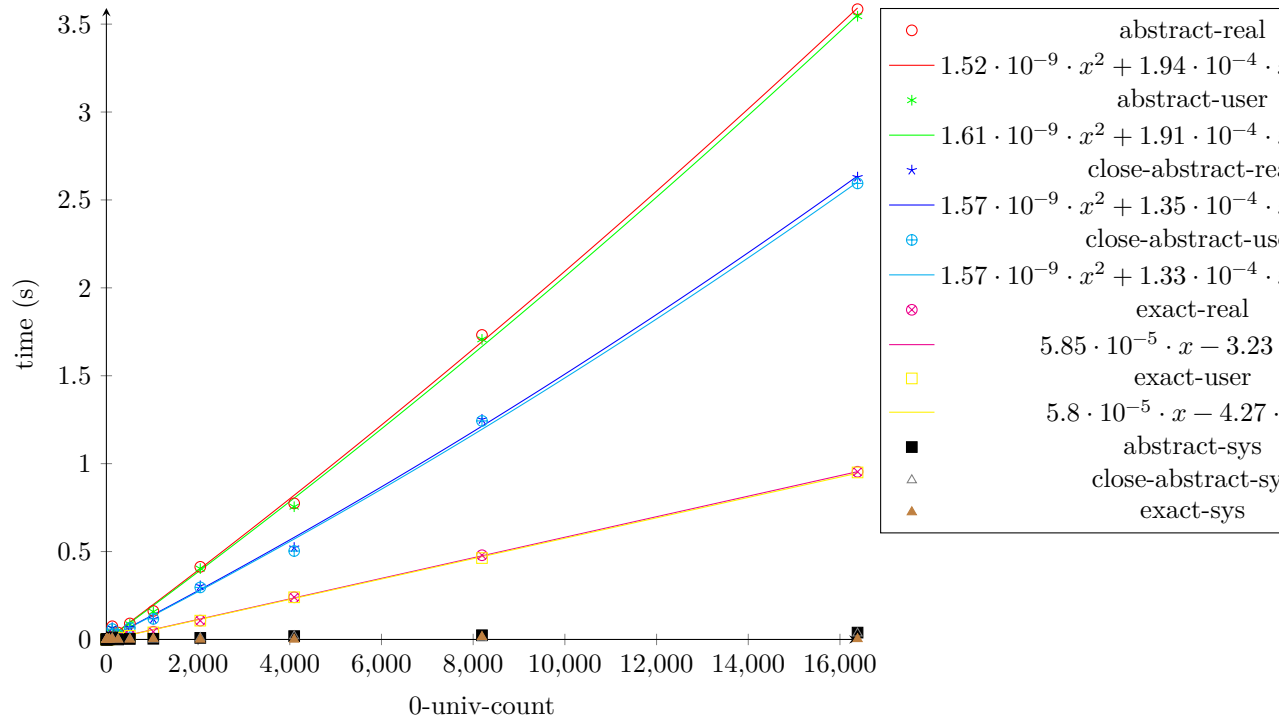


Figure 2: timing-n-polymorphic-universes param-1-n 0



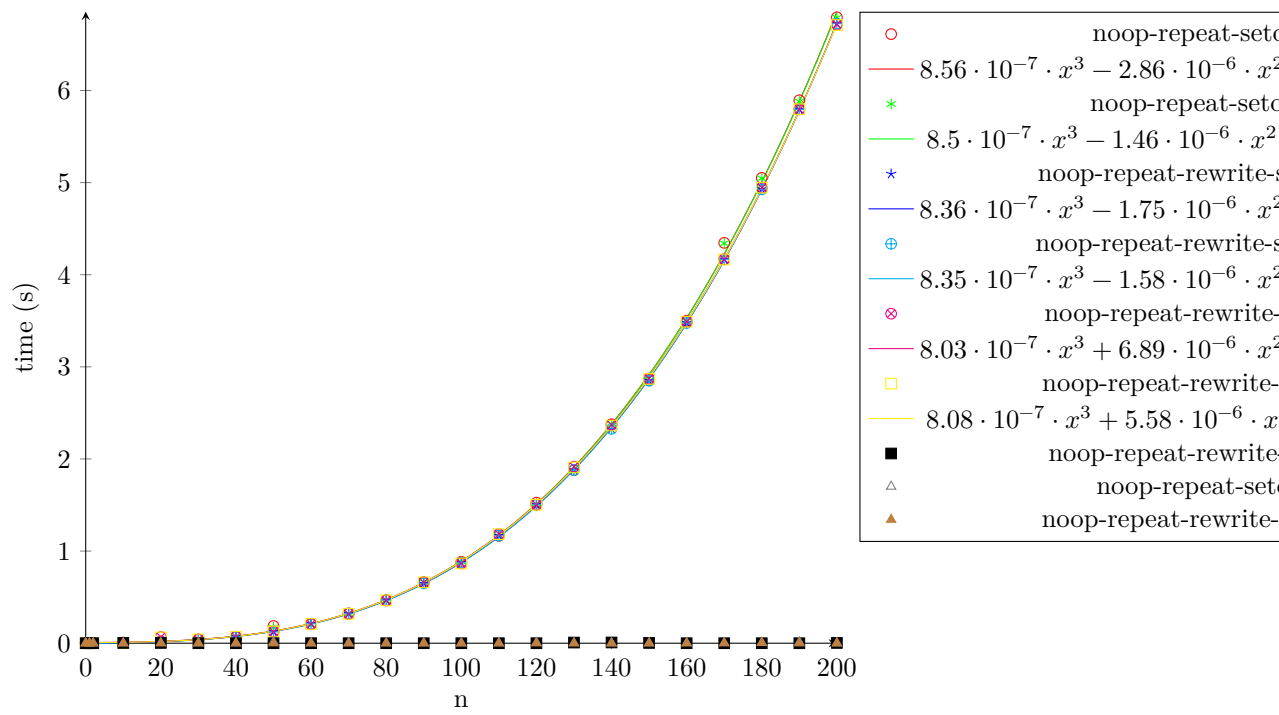


Figure 4: timing-repeat-setoid-rewrite-under-binders-noop

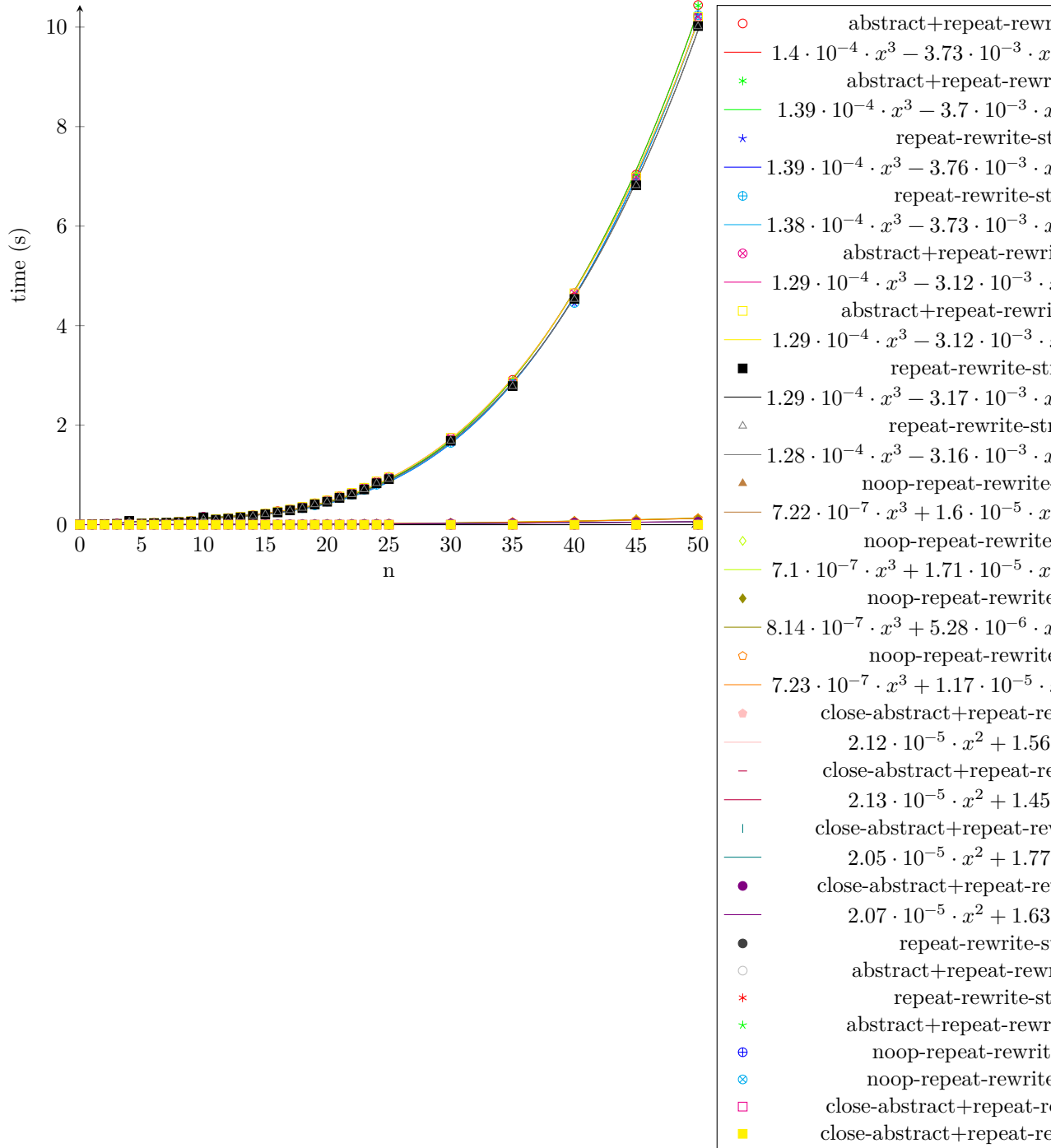


Figure 5: timing-rewrite-strat-under-binders

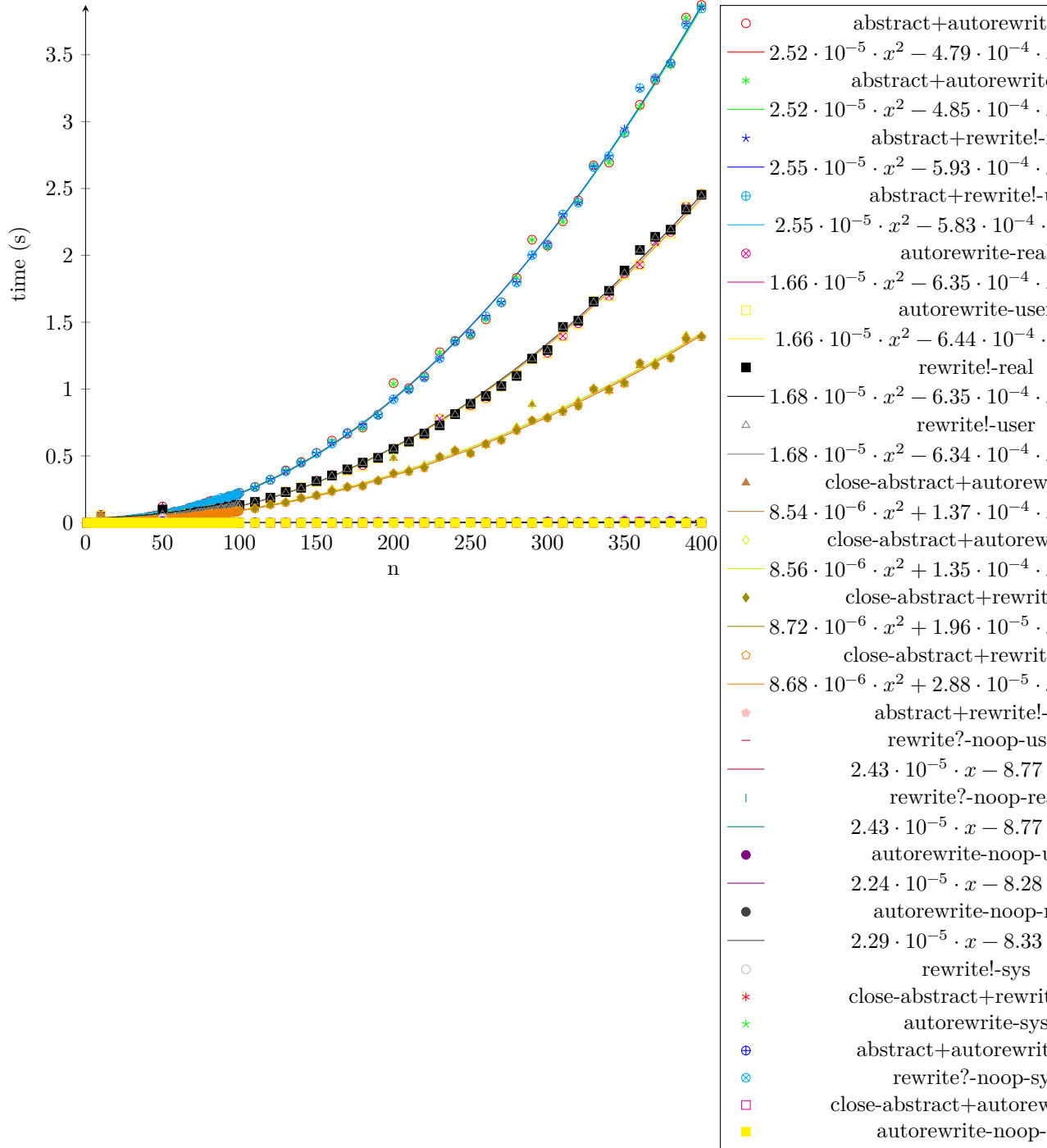


Figure 6: timing-rewrite-repeated-app-autorewrite

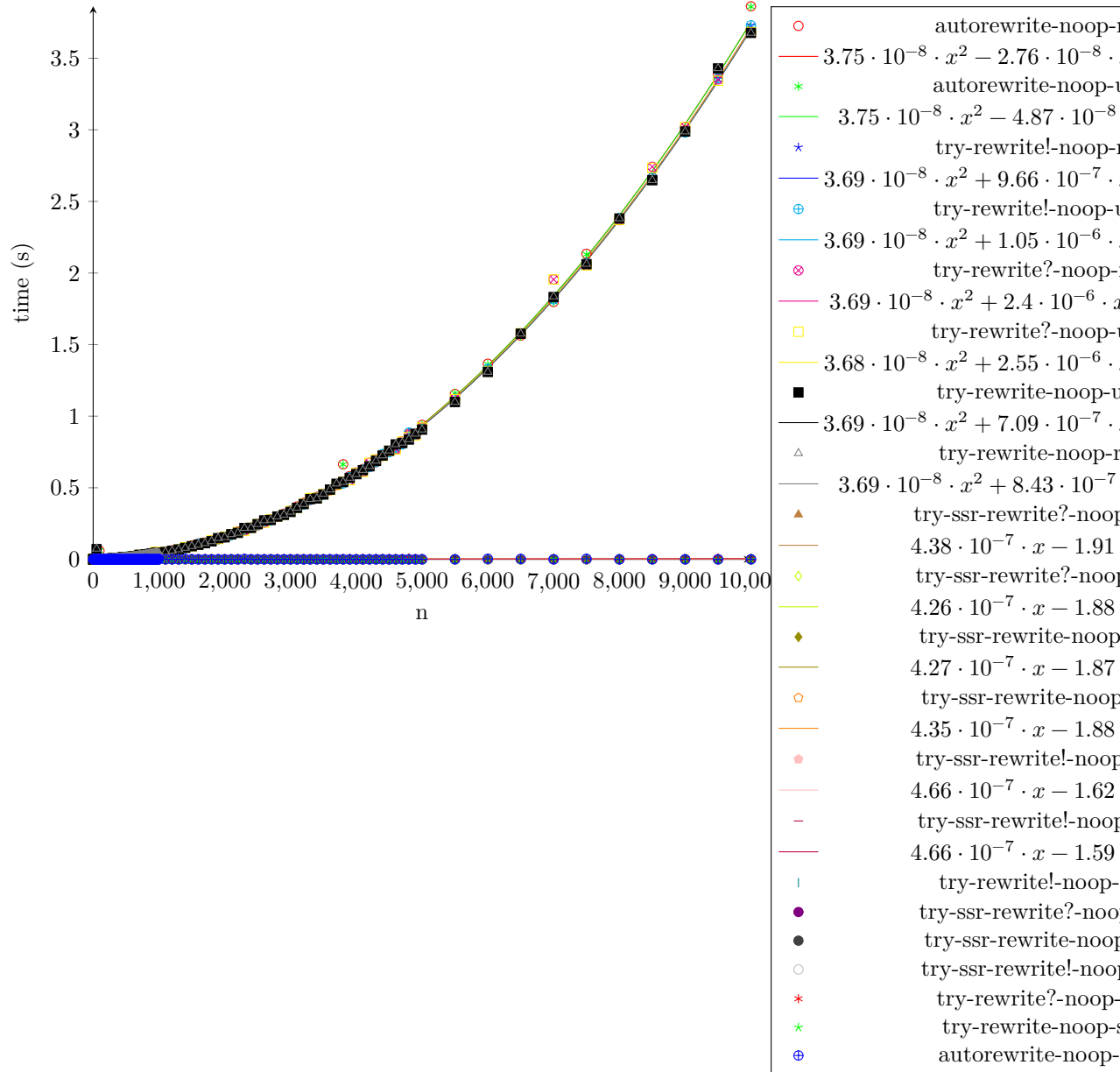


Figure 7: timing-rewrite-repeated-app-autorewrite-noop

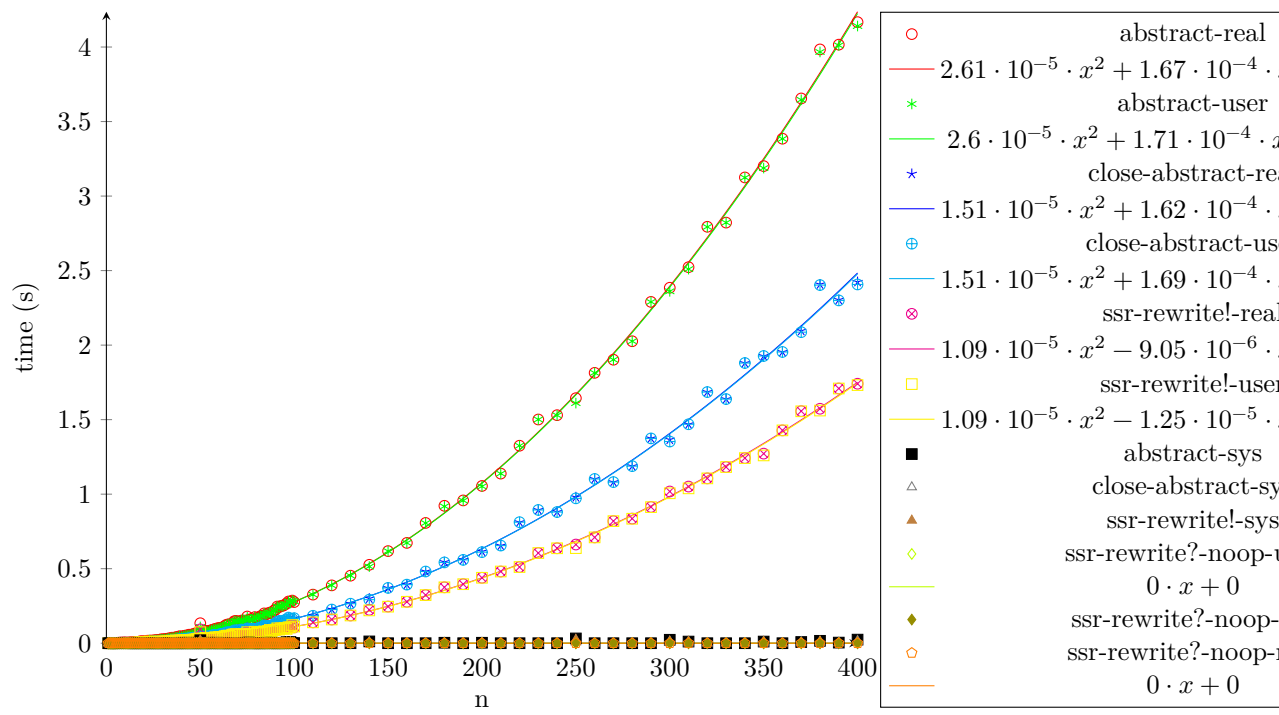


Figure 8: timing-rewrite-repeated-app-ssrrewrite



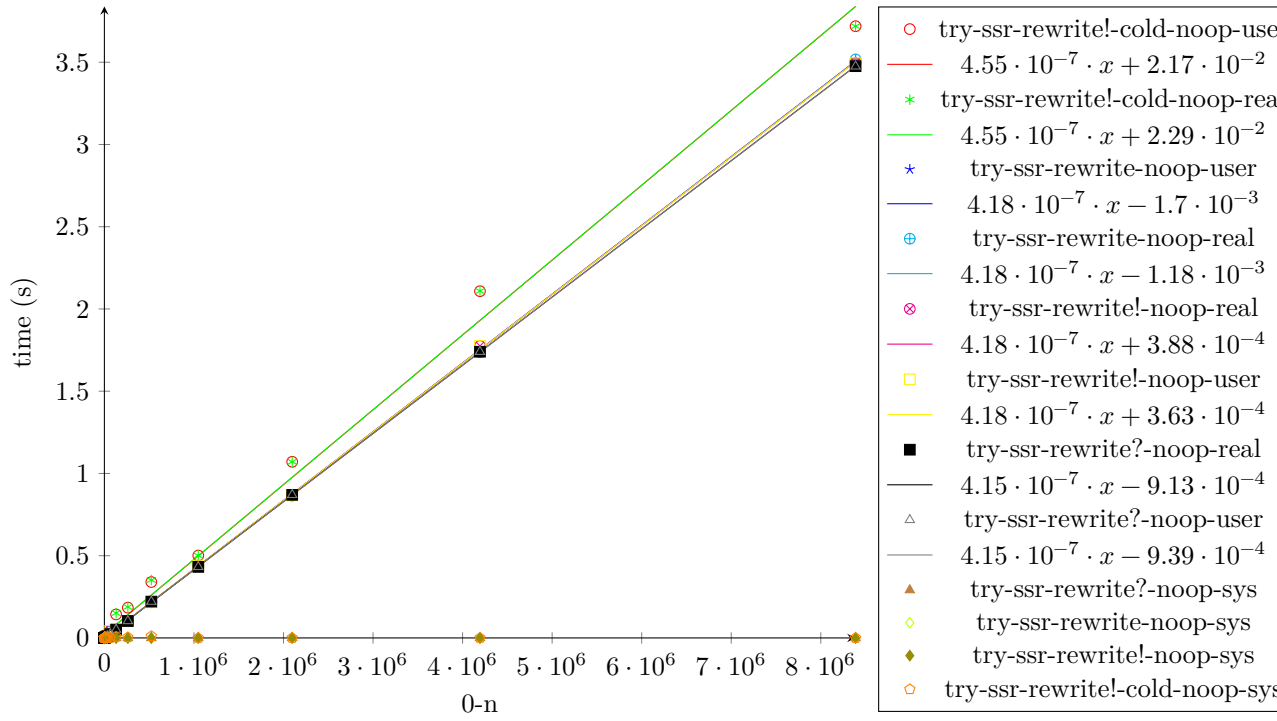


Figure 9: timing-rewrite-repeated-app-ssrrewrite-noop param-1-lgn 1

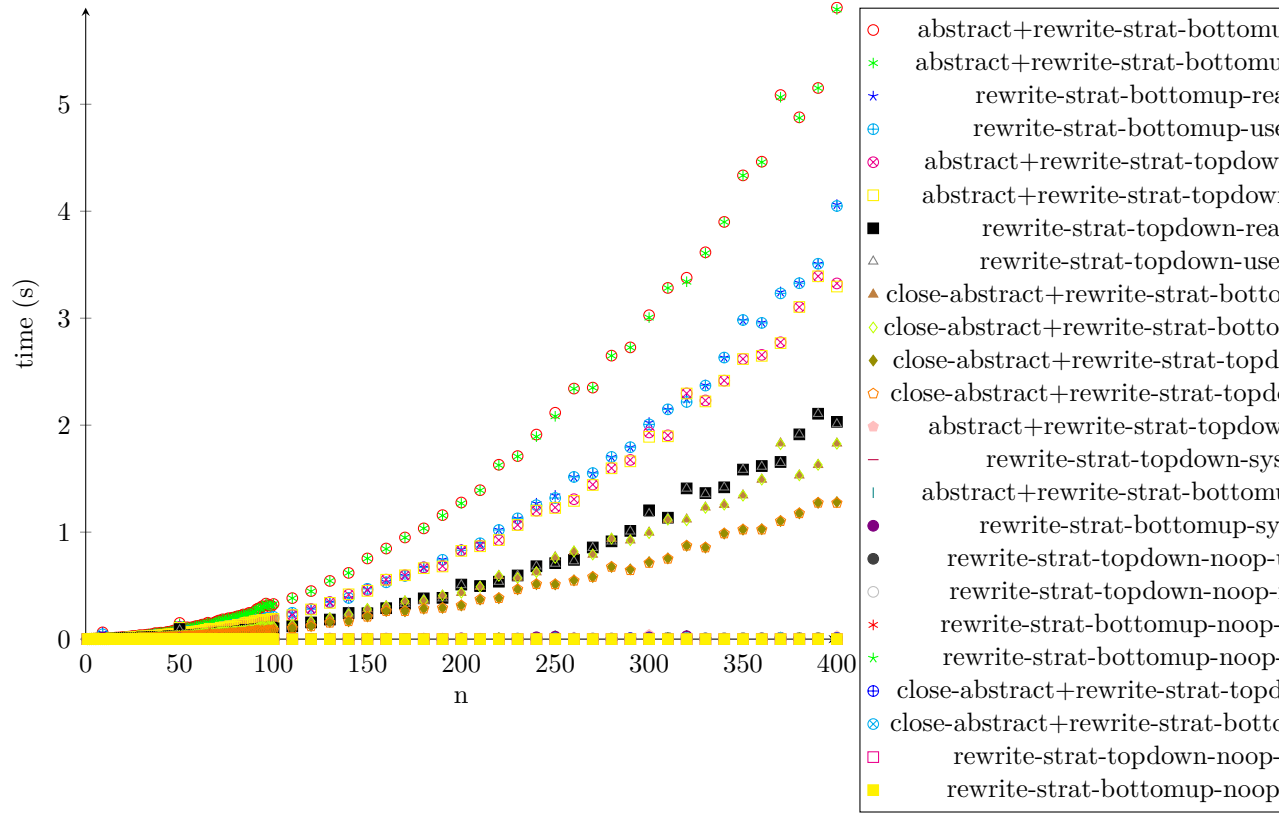


Figure 10: timing-rewrite-repeated-app-rewrite-strat

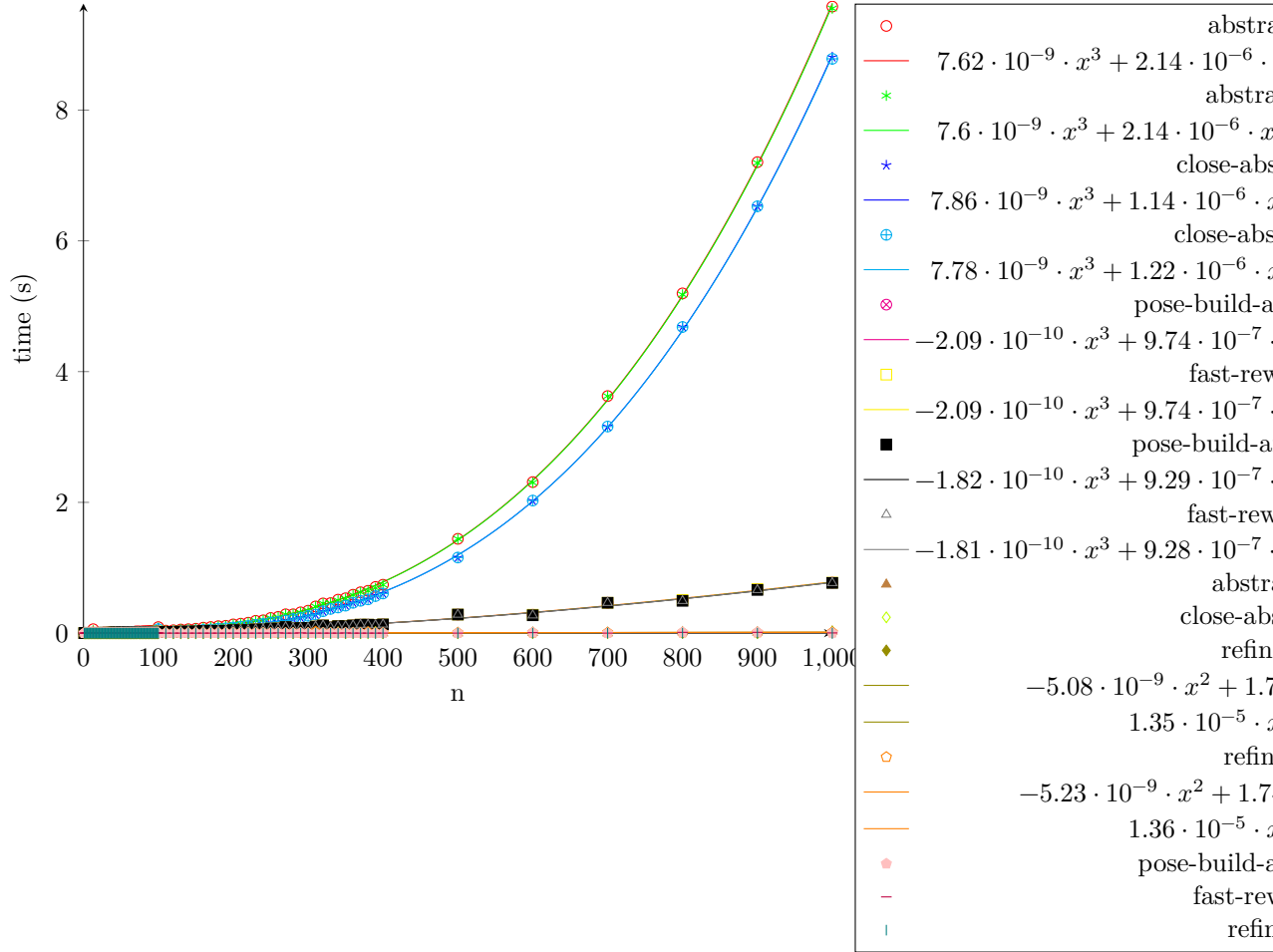


Figure 11: timing-rewrite-repeated-app-fast-rewrite

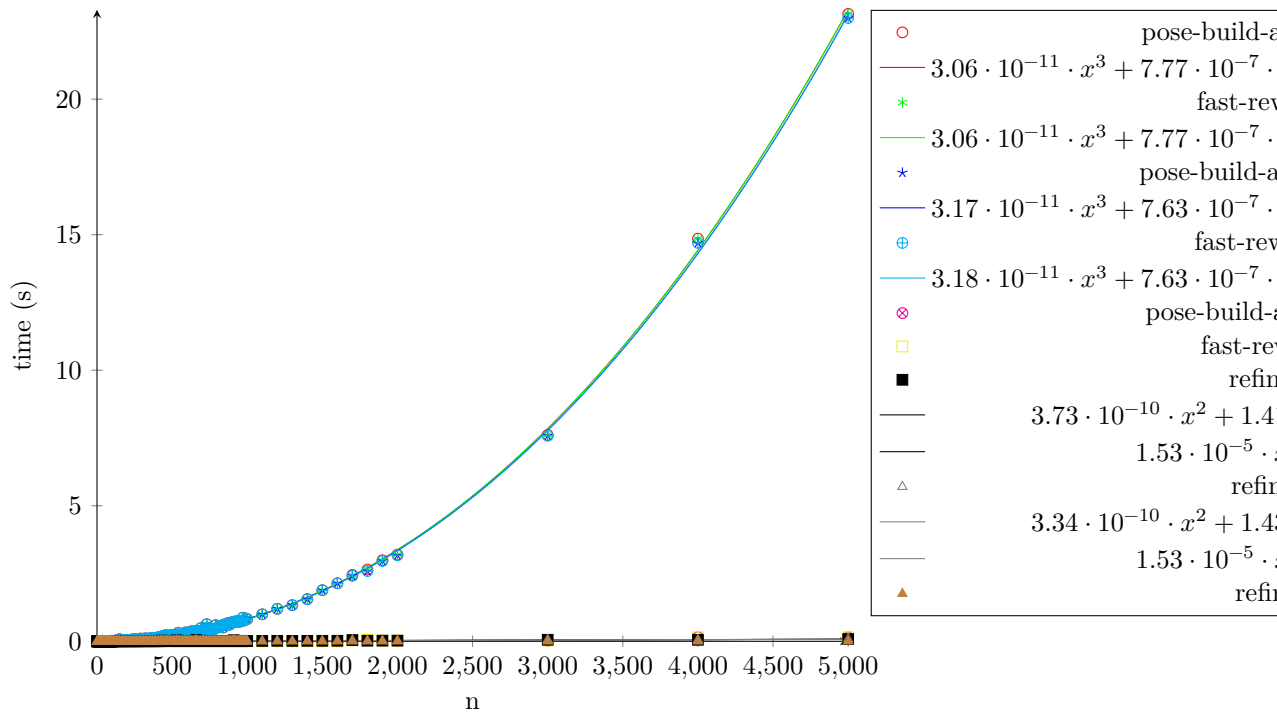


Figure 12: timing-rewrite-repeated-app-fast-rewrite-no-abstract

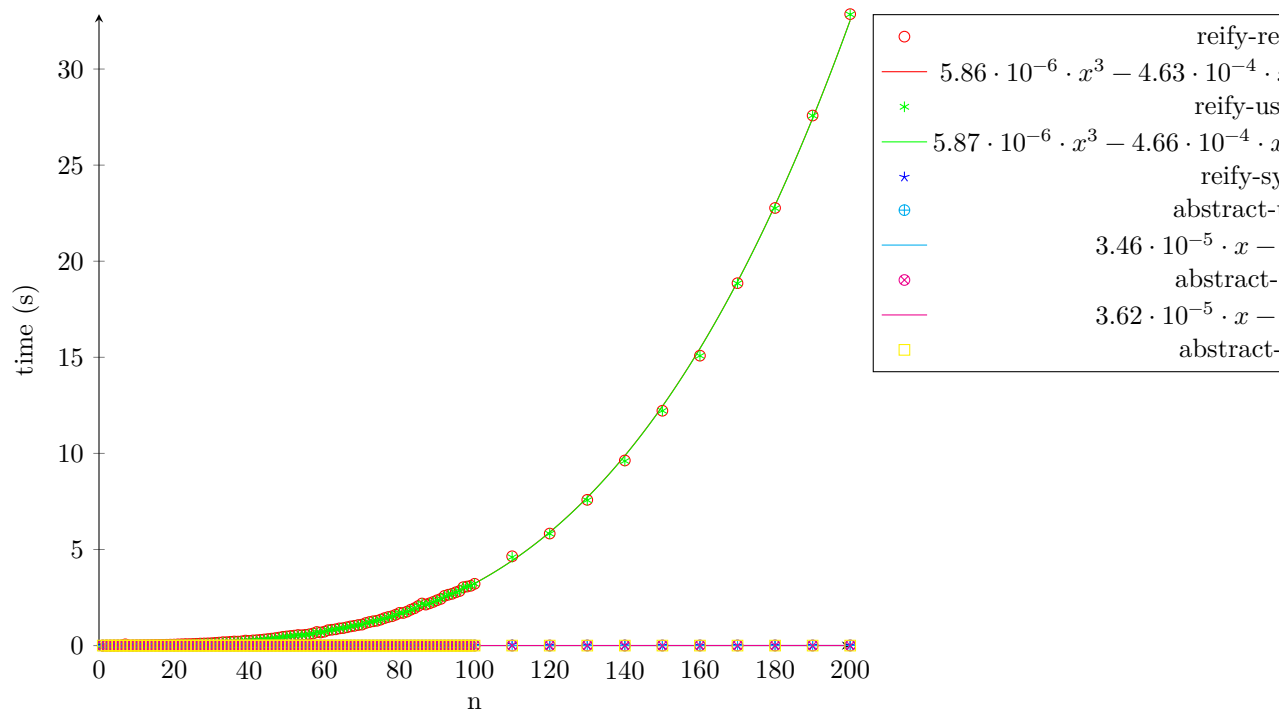


Figure 13: timing-typeclass-reification-let-in-HOAS

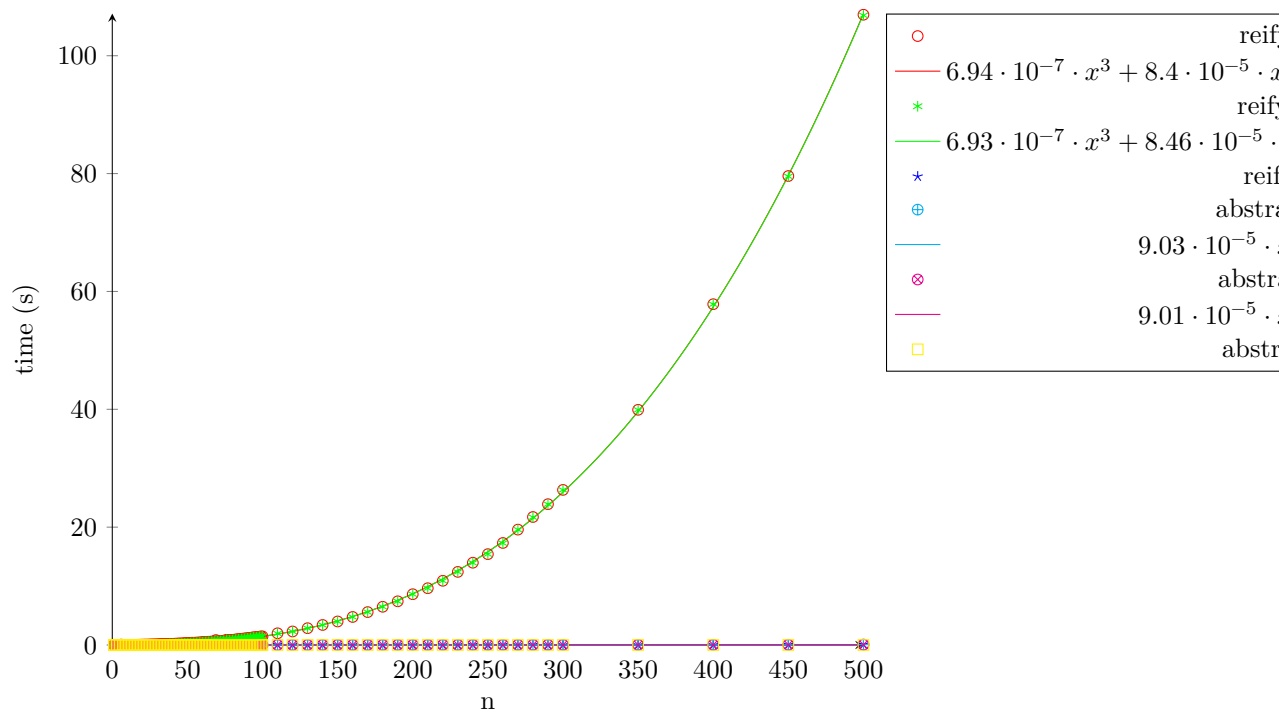
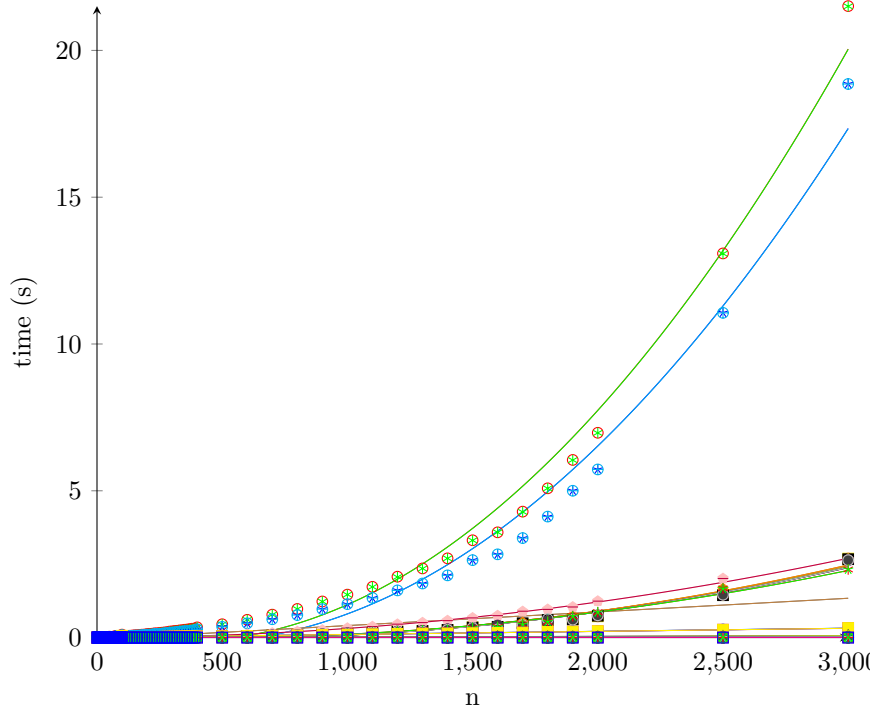


Figure 14: timing-typeclass-reification-let-in-PHOAS



- abstract-real
- $2.84 \cdot 10^{-6} \cdot x^2 - 1.91 \cdot 10^{-3} \cdot x + 0.0001$
- \* abstract-user
- $2.84 \cdot 10^{-6} \cdot x^2 - 1.91 \cdot 10^{-3} \cdot x + 0.0001$
- \* fast-rewrite-real
- $2.55 \cdot 10^{-6} \cdot x^2 - 1.92 \cdot 10^{-3} \cdot x + 0.0001$
- ⊕ fast-rewrite-user
- $2.55 \cdot 10^{-6} \cdot x^2 - 1.92 \cdot 10^{-3} \cdot x + 0.0001$
- ⊗ type-pf-cast-real
- $3.69 \cdot 10^{-7} \cdot x^2 - 3.14 \cdot 10^{-4} \cdot x + 0.0001$
- type-pf-cast-user
- $3.69 \cdot 10^{-7} \cdot x^2 - 3.14 \cdot 10^{-4} \cdot x + 0.0001$
- check-admit-real
- $3.66 \cdot 10^{-7} \cdot x^2 - 3.04 \cdot 10^{-4} \cdot x + 0.0001$
- △ refine-user
- $3.64 \cdot 10^{-7} \cdot x^2 - 2.9 \cdot 10^{-4} \cdot x + 0.0001$
- $4.65 \cdot 10^{-4} \cdot x - 5.67 \cdot 10^{-5}$
- △ refine-real
- $3.64 \cdot 10^{-7} \cdot x^2 - 2.9 \cdot 10^{-4} \cdot x + 0.0001$
- $4.65 \cdot 10^{-4} \cdot x - 5.67 \cdot 10^{-5}$
- ◇ check-admit-user
- $3.65 \cdot 10^{-7} \cdot x^2 - 3.03 \cdot 10^{-4} \cdot x + 0.0001$
- ◆ check-pf-cast-user
- $3.77 \cdot 10^{-7} \cdot x^2 - 3.17 \cdot 10^{-4} \cdot x + 0.0001$
- ◊ check-pf-cast-real
- $3.78 \cdot 10^{-7} \cdot x^2 - 3.17 \cdot 10^{-4} \cdot x + 0.0001$
- close-abstract-user
- $2.95 \cdot 10^{-7} \cdot x^2 + 1.44 \cdot 10^{-5} \cdot x + 0.0001$
- $2.95 \cdot 10^{-7} \cdot x^2 + 1.64 \cdot 10^{-5} \cdot x + 0.0001$
- | type-admit-real
- $3.66 \cdot 10^{-7} \cdot x^2 - 3.12 \cdot 10^{-4} \cdot x + 0.0001$
- type-admit-cast-user
- $3.63 \cdot 10^{-7} \cdot x^2 - 3.05 \cdot 10^{-4} \cdot x + 0.0001$
- type-admit-cast-real
- $3.64 \cdot 10^{-7} \cdot x^2 - 3.05 \cdot 10^{-4} \cdot x + 0.0001$
- type-admit-user
- $3.66 \cdot 10^{-7} \cdot x^2 - 3.12 \cdot 10^{-4} \cdot x + 0.0001$
- \* check-admit-cast-real
- $3.31 \cdot 10^{-7} \cdot x^2 - 2.38 \cdot 10^{-4} \cdot x + 0.0001$
- \* check-admit-cast-user
- $3.31 \cdot 10^{-7} \cdot x^2 - 2.38 \cdot 10^{-4} \cdot x + 0.0001$
- ⊕ build-eval-thunk-user
- $1.07 \cdot 10^{-4} \cdot x - 7.72 \cdot 10^{-5}$
- ⊗ build-eval-thunk-real
- $1.07 \cdot 10^{-4} \cdot x - 5.86 \cdot 10^{-5}$
- build-thunk-user
- $1.06 \cdot 10^{-4} \cdot x - 8.46 \cdot 10^{-5}$
- build-thunk-real
- $1.06 \cdot 10^{-4} \cdot x - 6.68 \cdot 10^{-5}$
- △ check-user