Solver setups

Name	Solver	Flags	Input
ACL2[_g]	ACL2	time-limit 5	SMT-LIB
		g:generalize	
CVC4[-Gen]	CVC4 (1.7)	lang=smt2quant-indtlimit=5000	SMT-LIB
		Gen:conjecture-gen	
CVC4-Gen-1.8	CVC4 (1.8)	lang=smt2quant-indtlimit=5000conjecture-gen	
Imandra	Imandra	default mode with 5 second server timeout	functional program encoding
Vampire[_gcx]	Vampire	-ind struct -t 5input_syntax smtlib	SMT-LIB
		g: -indgen on	
		c: -indoct on	
		x: -to lpo -drc off	
Zeno	Zeno	-t 5no-isa	functional program encoding
ZipperPosition	ZipperPosition	-t 5	.zf (native input format)
ZipRewrite		-t 5	.zf with definitions as rewrite rules

Benchmarks

benchmark set	example	count	A.C.I	il Ma	32.56 CV) ^{}^}	A CAC	J. Getr		idite Vani	pire c	Dire ch	dan	idic sc Van	ipire ger	ipire 25	Jengaria) lipk	LipperPoé
$combined/combined_nat_list$	$ \forall n, x. (cons(n + s(n), x) + (x + x) = (cons(s(n) + n, x) + x) + x) $	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0
list/concat_assoc_1var_10occ	$\forall v_0.((v_0 + ((v_0 + v_0) + v_0)) + (v_0 + (((v_0 + v_0) + v_0)) + (v_0 + v_0) + (((v_0 + v_0) + v_0))) = ((v_0 + v_0) + ((((v_0 + v_0) + (v_0 + v_0))) + (v_0 + v_0))) + (v_0 + v_0))) + (v_0 + v_0)$	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	0
list/concat_assoc_1var_3occ	$\forall v_0.(v_0 + (v_0 + v_0) = (v_0 + v_0) + v_0)$	1	0	1	0	0	0	0	0	0	0	1	1	1	1	0	0	1	0
list/concat_assoc_1var_4occ	$ \forall v_0.(((v_0 + v_0) + v_0) + v_0) + v_0 = v_0 + ((v_0 + v_0) + v_0) $	10	0	0	0	0	0	0	0	0	1	8	9	10	10	0	0	10	0
list/concat_assoc_1var_5occ	$\forall v_0.((v_0 + v_0) + (v_0 + (v_0 + v_0)) = (v_0 + (v_0 + v_0) + v_0) + (v_0 + v_0) + v_0)$	50	1	0	0	0	0	0	0	0	3	22	27	38	12	0	0	50	0
list/concat_assoc_1var_6occ	$\forall v_0.((v_0 + v_0) + (v_0 + ((v_0 + v_0) + v_0)) = v_0 + (v_0 + (((v_0 + v_0) + v_0) + v_0)))$	50	0	0	0	0	0	0	0	0	1	3	13	17	6	0	1	50	0
list/concat_assoc_1var_7occ	$\forall v_0.((v_0 + v_0) + ((v_0 + ((v_0 + v_0) + v_0)) + (v_0 + v_0) + (((v_0 + v_0) + v_0) + ((v_0 + v_0)))$	50	0	0	0	0	0	0	0	0	2	0	5	12	1	0	0	50	0
list/concat_assoc_1var_8occ	$ \forall v_0.(v_0 ++ ((((v_0 ++ v_0) ++ ((v_0 ++ v_0) ++ v_0)) ++ (v_0 ++ v_0) ++ ((v_0 ++ v_0))) ++ (v_0 ++ v_0))) $	50	0	0	0	0	0	0	0	0	0	1	1	2	1	0	0	47	0
list/concat_assoc_1var_9occ	$\forall v_0.(((v_0 + v_0) + (v_0 + v_0)) + (v_0 + (v_0 + v_0)) + (v_0 + (v_0 + v_0))) = (v_0 + (v_0 + v_0)) + ((v_0 + (v_0 + v_0) + v_0)) + (v_0 + v_0))$	50	0	0	0	0	0	0	0	0	1	1	1	2	1	0	0	47	0
list/concat_assoc_2var_4occ	$\forall x, y.(x++(y++(x++x)) = (x++y)++(x++x))$	1	0	1	0	0	0	0	0	0	1	1	1	1	1	0	1	1	0
list/concat_assoc_3var_3occ	$\forall x, y, z.(x ++ (y ++ z) = (x ++ y) ++ z)$	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
$list/pref_1var_1_2occ$	$\forall v_0.pref(v_0, v_0 ++ v_0)$	1	0	1	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0

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benchmark set	example	count	<i>≫</i>		0	\mathcal{C}	67	Mil	7.9.	7.9%	70,	7.9%	10,	70,	7.9.	79.	Nex	Vill	Tit.
list/pref_1var_1_3occ	$\forall v_0.pref(v_0, (v_0 ++ v_0) ++ v_0)$	2	0	2	0	0	0	0	0	0	1	2	2	2	2	0	1	2	0
$list/pref_1var_1_4occ$	$\forall v_0.pref(v_0, v_0 ++ (v_0 ++ (v_0 ++ v_0)))$	5	0	5	0	0	0	0	0	0	2	5	5	5	5	0	2	5	0
$list/pref_1var_1_5occ$	$\forall v_0.pref(v_0, v_0 ++ ((v_0 ++ v_0) ++ (v_0 ++ v_0)))$	14	0	14	0	0	0	0	0	0	6	14	14	14	14	0	6	14	0
$list/pref_1var_2_3occ$	$\forall v_0.pref(v_0 ++ v_0, v_0 ++ (v_0 ++ v_0))$	2	0	2	0	0	0	0	0	0	1	0	1	1	0	0	1	0	0
$list/pref_1var_2_4occ$	$\forall v_0.pref(v_0 ++ v_0, v_0 ++ ((v_0 ++ v_0) ++ v_0))$	5	0	5	0	0	0	0	0	0	1	0	2	2	0	0	1	5	0
$list/pref_1var_2_5occ$	$\forall v_0.pref(v_0++v_0,(v_0++(v_0++(v_0++v_0)))++v_0)$	14	0	14	0	0	0	0	0	0	3	0	5	5	0	0	3	14	0
list/pref_1var_2_6occ	$ \begin{vmatrix} \forall v_0.pref(v_0 ++ v_0, (v_0 ++ ((v_0 ++ v_0) ++ v_0)) ++ \\ (v_0 ++ v_0) \end{vmatrix} $	42	0	42	0	0	0	0	0	0	9	0	15	14	0	0	9	42	0
$list/pref_1var_3_3occ$	$\forall v_0.pref((v_0 ++ v_0) ++ v_0, v_0 ++ (v_0 ++ v_0))$	2	0	0	0	0	0	0	0	0	0	2	1	1	2	0	0	2	0
list/pref_1var_3_4occ	$\forall v_0.pref((v_0++v_0)++v_0,v_0++((v_0++v_0)++v_0))$	10	0	0	0	0	0	0	0	0	2	0	2	2	0	0	2	0	0
list/pref_1var_3_5occ	$ \forall v_0.pref(v_0 ++ (v_0 ++ v_0), (v_0 ++ ((v_0 ++ v_0) ++ (v_0 ++ v_0)) ++ (v_0 ++ v_0) + (v_0 ++ v_0 ++ v_0) + (v_0 ++ v_0 ++ v_0) + (v_0 ++ v_0 ++ v_0$	28	0	0	0	0	0	0	0	0	4	0	4	4	0	0	4	28	0
list/pref_1var_3_6occ	$ \forall v_0.pref(v_0 ++ (v_0 ++ v_0), (v_0 ++ v_0) ++ (((v_0 ++ v_0) ++ v_0) ++ v_0)) $	50	0	0	0	0	0	0	0	0	4	0	7	6	0	0	6	50	0
list/pref_1var_3_7occ	$ \forall v_0.pref(v_0 ++ (v_0 ++ v_0), ((v_0 ++ v_0) ++ v_0) ++ (v_0 ++ ((v_0 ++ v_0) ++ v_0))) $	50	0	0	0	0	0	0	0	0	6	0	8	8	0	0	8	50	0
list/pref_1var_4_4occ	$ \begin{vmatrix} \forall v_0.pref(v_0 ++ (v_0 ++ (v_0 ++ v_0)), ((v_0 ++ v_0) ++ (v_0 ++ v_0)), ((v_0 ++ v_0) ++ (v_0 ++ v_0)) \end{vmatrix} $	20	0	0	0	0	0	0	0	0	0	0	5	6	0	0	0	20	0
list/pref_1var_4_5occ	$ \begin{vmatrix} \forall v_0.pref(v_0 ++ (v_0 ++ (v_0 ++ v_0)), v_0 ++ (((v_0 ++ v_0) ++ v_0) ++ v_0) \end{vmatrix} $	50	0	0	0	0	0	0	0	0	5	0	7	6	0	0	5	0	0
list/pref_1var_4_6occ	$ \forall v_0.pref((v_0 ++ v_0) ++ (v_0 ++ v_0), (((v_0 ++ v_0) ++ (v_0 ++ v_0)) ++ (v_0 ++ v_0)) $	50	0	0	0	0	0	0	0	0	3	0	3	3	0	0	4	50	0
$list/pref_1var_4_7occ$	$ \forall v_0.pref(((v_0 ++ v_0) ++ v_0) ++ v_0, ((v_0 ++ (v_0 ++ (v_0 ++ v_0)) ++ (v_0 ++ v_0)) ++ v_0) $	50	0	0	0	0	0	0	0	0	2	0	2	2	0	0	2	50	0
list/pref_1var_4_8occ	$ \forall v_0.pref(v_0 ++ ((v_0 ++ v_0) ++ v_0), (v_0 ++ v_0) ++ ((v_0 ++ (v_0 ++ v_0))) ++ (v_0 ++ v_0))) $	50	0	0	0	0	0	0	0	0	2	0	2	2	0	0	2	50	0
$list/pref_1var_5_5occ$	$ \forall v_0.pref((v_0 + v_0) + (v_0 + (v_0 + v_0)), (v_0 + (v_0 + v_0)) + (v_0 + v_0)) $	50	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	50	0
list/pref_1var_5_6occ	$ \forall v_0.pref(((v_0 ++ v_0) ++ v_0) ++ (v_0 ++ v_0), ((v_0 ++ v_0) ++ (v_0 ++ v_0) ++ v_0)) $	50	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
$list/pref_1var_5_7occ$	$\forall v_0.pref(v_0 ++ (((v_0 ++ v_0) ++ v_0) ++ v_0), ((v_0 ++ v_0) ++ (v_0 ++ (v_0 ++ v_0))) ++ v_0)$	50	0	0	0	0	0	0	0	0	1	0	1	1	0	0	2	50	0
$list/pref_1var_5_8occ$	$ \forall v_0.pref(((v_0 ++ v_0) ++ v_0) ++ (v_0 ++ v_0), ((v_0 ++ v_0) ++ (v_0 ++ v_0)) ++ ((v_0 ++ v_0) ++ v_0)) $	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	50	0
list/pref_1var_5_9occ	$ \forall v_0.pref((v_0 ++ v_0) ++ ((v_0 ++ v_0) ++ v_0), (((v_0 ++ v_0)) ++ (v_0 ++ v_0)) ++ (v$	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	50	0
list/pref_2var_1_2occ	$\forall x, y.pref(x, x ++ y)$	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
list/reverse_expressions	$\forall x.(x + (rev(x) + x) = (x + rev(x)) + x)$	4	0	0	0	0	0	1	0	0	1	2	2	2	2	0	0	2	0
nat/add_assoc_1var_10occ	$ \forall v_0.(v_0 + ((v_0 + v_0) + ((v_0 + v_0) + (((v_0 + v_0) + (((v_0 + v_0) + (v_0 + v_0))))) = ((v_0 + (v_0 + v_0)) + v_0) + (((v_0 + v_0) + (v_0 + v_0)) + (v_0 + v_0))) $	50	0	0	0	50	0	0	0	0	3	0	0	1	0	0	2	43	0
nat/add_assoc_1var_3occ	$\forall v_0.(v_0 + (v_0 + v_0) = (v_0 + v_0) + v_0)$	1	0	1	0	1	0	0	0	0	1	1	1	1	1	0	1	1	0
nat/add_assoc_1var_4occ	$\forall v_0.((v_0 + (v_0 + v_0)) + v_0 = v_0 + ((v_0 + v_0) + v_0))$	10	0	0	0	10	0	0	0	0	4	8	10	10	10	0	2	10	0
$nat/add_assoc_1var_5occ$	$\forall v_0.((((v_0 + v_0) + v_0) + v_0) + v_0 = ((v_0 + v_0) + v_0) + v_0) + v_0 = ((v_0 + v_0) + v_0) + v_0$	50	1	0	0	50	0	0	0	0	12	13	22	41	17	0	6	50	0
nat/add_assoc_1var_6occ	$ \begin{vmatrix} (v_0 + v_0) + v_0 \\ \forall v_0 \cdot (((v_0 + (v_0 + v_0)) + v_0) + (v_0 + v_0)) = v_0 + \\ ((v_0 + (v_0 + v_0)) + (v_0 + v_0))) \end{vmatrix} $	50	3	0	0	50	0	0	0	0	12	2	14	31	9	0	11	50	0

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			ACI	ir ba	32.50 CV	i ^{jk} cri ^c	A Gest	Ja Gerr	idia	ipire Vair	nire c	Dire ch	Dire &	ndire is	Dire Sc	Dire St	ipire X	. S	kemitie Vipper
benchmark set	example	count													7.0				
nat/add_assoc_1var_7occ	$\forall v_0.((((v_0+v_0)+v_0)+(v_0+(v_0+v_0)))+v_0 =$	50	0	0	0	50	0	0	0	0	6	1	5	12	1	0	2	50	0
nat/add_assoc_1var_8occ	$((v_0 + v_0) + (v_0 + (v_0 + v_0))) + (v_0 + v_0))$ $\forall v_0 . ((v_0 + v_0) + (((v_0 + (v_0 + v_0)) + (v_0 + v_0)) + (v_0 + v_0)) + (v_0 + v_0)) + (v_0 + v_0) + (v_0 + v_0) + (v_0 + v_0)) + (v_0 + v_0) + (v_0 + v$	50	0	0	0	50	0	0	0	0	2	0	0	3	0	0	1	50	0
nat/auu_assoc_ivai_socc	$v_0 = ((v_0 + (v_0) + ((v_0 + (v_0) + v_0)) + (v_0 + v_0)) + (v_0 + v_0)) + (v_0 + v_0)) + (v_0 + v_0))$	50	0	0	0	30	U	0	0	U	2	U	0	9	0	U	1	30	
nat/add_assoc_1var_9occ	$\forall v_0.((v_0 + (v_0 + v_0)) + ((v_0 + ((v_0 + (v_0 + v_0)) + v_0)) + v_0)) + ((v_0 + ((v_0 + (v_0 + v_0)) + ((v_0 + (v_0 + v_0))) + ((v_0 + (v_0 + v_0))) + (v_0 + (v_0 + v_0)))) + (v_0 + (v_0 + v_0))) + (v_0 + (v_0 + v_0))) + (v_0 + (v_0 + (v_0 + v_0))) + (v_0 + (v_0 + (v_0 + v_0))) + (v_0 + (v_0 + v_0)) + (v_0 + (v_0 + v_0))) + (v_0 + (v_0 + v_0))) + (v_0 + (v_0 + v_0)) + (v_0 + (v_0 + v_0)) + (v_0 + v_0) + (v_0 + v_0)) + (v_0 + v_0)) + (v_0 + v_0) + (v_0 + v_0)) + (v_0 + v_0) + (v_0 + v_0)) + (v_0 + v_0)) + (v_0 + v_0) + (v_0 + v_0)) + (v_0 + v_0) + (v_0 + v_0)) + (v_0 + v_0) + (v_0 + v_0) + (v_0 + v_0)) + (v_0 + v_0) + (v_0 + v_0)) + (v_0 + v_0) + (v_0 + v_0) + (v_0 + v_0) + (v_0 + v_0) + (v_0 + v_0$	50	0	0	0	50	0	0	0	0	1	0	0	0	0	0	0	47	0
nat/add_assoc_3var	$\forall x, y, z.(x + (y + z) = (x + y) + z)$	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
nat/add_comm	$\forall x, y.(x+y=y+x)$	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
$nat/add_comm_with_id$	$\forall x, y. (id(x) + y = y + x)$	1	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1
$nat/add_mix_2var_3occ$	$\forall v_0, v_1.((v_1+v_1)+v_0=v_0+(v_1+v_1))$	30	2	6	2	5	2	18	2	2	17	20	23	30	30	2	12	30	3
$nat/add_mix_2var_4occ$	$\forall v_0, v_1.((v_1+v_0)+(v_1+v_0)=(v_1+(v_1+v_0))+v_0)$	50	2	5	0	4	0	11	0	0	19	6	14	44	29	0	17	36	3
nat/add_mix_2var_5occ	$\forall v_0, v_1.((v_0 + v_1) + (v_0 + (v_1 + v_1)) = v_0 + ((v_1 + v_1) + (v_1 + v_0)))$	50	1	2	1	7	1	12	1	1	4	4	5	15	9	1	6	21	1
nat/add_mix_2var_6occ	$\forall v_0, v_1.(v_1 + ((((v_0 + v_0) + v_1) + v_1) + v_1) = (((v_1 + v_0) + v_1) + (v_0 + v_1)) + v_1)$	50	0	1	0	1	0	0	0	0	4	2	3	3	2	0	3	7	0
nat/add_mix_2var_7occ	$\forall v_0, v_1.((v_0 + (v_1 + (v_1 + v_0))) + (v_1 + (v_1 + v_0)) = v_1 + (((v_1 + (v_0 + v_1)) + v_0) + (v_1 + v_0)))$	50	0	0	0	4	0	2	0	0	1	1	1	2	0	0	2	2	1
nat/add_mix_3var_3occ	$\forall v_0, v_1, v_2.((v_1 + v_0) + v_2 = (v_2 + v_1) + v_0)$	50	6	4	35	38	36	47	29	27	48	24	27	45	50	50	36	50	44
nat/add_mix_3var_4occ	$\forall v_0, v_1, v_2.((v_1 + v_0) + (v_1 + v_2) = (v_1 + (v_0 + v_1)) + v_2)$	50	2	0	0	2	0	12	1	1	13	5	8	35	28	1	9	31	12
nat/add_mix_3var_5occ	$\forall v_0, v_1, v_2.((v_1 + v_2) + ((v_1 + v_1) + v_0) = v_0 + (v_1 + ((v_2 + v_1) + v_1)))$	50	2	0	0	1	0	2	0	0	7	2	2	16	3	0	7	13	0
nat/add_mix_3var_6occ	$\forall v_0, v_1, v_2.((v_2 + v_0) + ((v_2 + v_1) + (v_1 + v_0)) = (v_1 + (v_2 + ((v_2 + v_1) + v_0))) + v_0)$	50	0	0	0	1	0	2	0	0	1	0	1	3	0	0	0	1	1
nat/add_mix_3var_7occ	$\forall v_0, v_1, v_2.((v_0 + (v_2 + v_0)) + (v_2 + ((v_1 + v_0) + v_2)) = ((v_1 + ((v_2 + v_2) + v_0)) + (v_0 + v_2))$	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
nat/add_mix_4var_4occ	$\forall v_0, v_1, v_2, v_3.((v_2 + (v_3 + v_1)) + v_0 = (v_1 + (v_3 + v_2)) + v_0)$	50	6	1	11	21	13	20	8	7	31	6	9	26	29	34	24	14	11
nat/add_mix_4var_5occ	$\forall v_0, v_1, v_2, v_3.((v_1+v_0)+(v_2+(v_2+v_3)) = (v_2+(v_1+v_0)+v_3))+v_2)$	50	1	0	1	1	1	3	0	0	3	0	3	6	4	1	4	4	1
nat/add_mix_4var_6occ	$\forall v_0, v_1, v_2, v_3.(v_2 + ((((v_0 + v_1) + v_3) + v_2) + v_2) = (v_2 + (v_3 + ((v_0 + v_1) + v_2))) + v_2)$	50	0	0	0	0	0	0	0	0	2	0	0	1	0	0	1	3	0
nat/add_mix_4var_7occ	$\forall v_0, v_1, v_2, v_3.((((v_1+v_0)+v_0)+(v_2+(v_3+v_3)))+v_1=v_0+((v_1+v_1)+(v_3+(v_3+(v_0+v_2)))))$	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
nat/add_mix_5var_5occ	$\forall v_0, v_1, v_2, v_3, v_4.((v_0 + v_2) + ((v_1 + v_3) + v_4)) = v_0 + (v_4 + ((v_1 + v_3) + v_2)))$	50	1	0	1	1	1	5	0	0	4	0	1	3	1	8	11	6	2
nat/add_mix_5var_6occ	$\forall v_0, v_1, v_2, v_3, v_4.((v_3 + (v_2 + (v_4 + v_2))) + (v_1 + v_0)) = v_1 + (v_3 + ((v_2 + (v_4 + v_0)) + v_2)))$	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0
nat/add_mix_5var_7occ	$\forall v_0, v_1, v_2, v_3, v_4.((v_1 + v_0) + ((v_1 + (v_0 + v_3)) + (v_2 + v_4)) = (v_3 + v_0) + ((v_1 + ((v_4 + v_0) + v_1)) + v_2))$	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
$nat/add_s_1var_2occ$	$\forall x.(s(x) + x = s(x+x))$	2	1	2	1	2	1	1	1	1	2	2	2	2	2	1	1	2	1
nat/add_s_zero_mix_12	$\forall v_0, v_1.(s(s(v_0) + (s(s(s(v_1))) + ((v_1 + s(v_1)) + s(v_0)))) = s(v_0) + ((v_0 + s(s(s(v_1 + s(v_1))))) + s(s(v_1))))$	50	0	0	2	6	2	11	3	2	15	4	3	20	20	20	4	12	2

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benchmark set	example	count	₽C!	ir Mai	ي ريزار	, حيار	ا ريار	Jana Tana	ir Asin	1, 1, 377	18 197	ir Jain	1970	18 187	1310	1, 1970	ipir leir	ig Tity	Tipp ²
nat/add_s_zero_mix_15	$\forall v_0, v_1, v_2.(s(s(s(s(v_1)) + (s(s(v_2) + s(v_0)) + s(v_2))))) + s(v_0) = s(((s(s(v_2))) + s(v_1)) + s(v_0)) + s(v_0 + s(s(s(v_2))))))$	50	0	0	1	1	0	4	1	1	2	1	1	3	5	7	0	3	1
nat/add_s_zero_mix_18	$\forall v_0, v_1, v_2, v_3, v_4.(s(s(((v_3 + s(s(v_1) + v_0)) + (s(s(v_4)) + s(s(s(v_2 + s(v_4))))) + s(v_2))) = s(v_0) + (s(v_4) + s(s(s(s(s(s(s((v_4 + v_3) + s(v_1)) + (s(v_2) + v_2)))))))))$	50	0	0	0	0	0	1	0	0	1	0	0	1	2	5	1	0	0
nat/add_s_zero_mix_21	$ \forall v_0, v_1, v_2, v_3, v_4, v_5, v_6, v_7, v_8.(s(s(s((s(v_8) + v_0) + s(s((s(v_1) + s(s(v_4))) + v_3))) + s(s(v_2) + (v_7 + (v_6 + s(v_5))))))) = v_8 + (((s(v_1) + (v_7 + s(s(s(s(v_6) + s(v_0)))))) + (v_4 + s(v_3))) + s(v_5 + s(s(s(s(v_2))))))) $	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
nat/add_s_zero_mix_24	$ \forall v_0, v_1, v_2, v_3, v_4, v_5, v_6, v_7.(((s(s(zero)) + zero) + s(s(s(v_3)))) + (s(s(((v_2 + s(v_7)) + s(v_5)) + (s(s(v_6)) + s(v_1))) + s(v_4))) + s(v_0)) = ((v_3 + s(v_4)) + s(s(((s(s(v_2)) + s(v_1)) + (s(s(s(v_0 + s(zero)))) + zero)) + (s(v_7) + v_6)))) + s(s(s(v_5)))) $	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
nat/add_s_zero_mix_27	$ \forall v_0, v_1, v_2, v_3, v_4, v_5, v_6, v_7, v_8, v_9. (s(s(s(s(s(s(s(s(s(s(s(s(s(s(s(s(s(s(s$	$(s(s{f 50}_2)))$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
nat/add_s_zero_mix_3	$\forall v_0, v_1.(v_0 + s(v_1) = v_1 + s(v_0))$	34	14	18	32	34	31	29	32	32	34	34	34	34	34	32	30	34	32
nat/add_s_zero_mix_30	$\forall v_0, v_1, v_2, v_3, v_4, v_5, v_6, v_7, v_8, v_9, v_{10}, v_{11}.(s(((s(s(v_9))+v_7)+v_2)+((s(zero)+v_{10})+s(v_4)))+$	_	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	$ (s(s(v_6)) + s(v_0))) + s(s(s(s(s(v_{11}) + v_1))) + s(s(v_{11}) + (v_8 + s(v_3)))) = s(s(s(v_3 + (v_{10} + (((s(s(v_1)) + s(s(v_6 + s(s(s(s(v_2))) + (v_8 + v_4)))) + v_{11})) + v_0) + s(s(zero) + s(s(v_7 + v_9))))))) + v_5) + v_{11}) $																		
nat/add_s_zero_mix_6	$\begin{array}{lll} v_1))) \ + \ s(s(v_{11}) \ + \ (v_8 \ + \ s(v_3)))) \ = \\ s(s(s(v_3 \ + \ (v_{10} \ + \ (((s(s(v_1)) \ + \ s(s(v_6 \ + \ s(s(s(s(v_2))) + (v_8 \ + v_4)))) + v_{11})) + v_0) \ + \\ s(s(s(s(v_2))) \ + \ (v_8 \ + v_4))))))) \ + \ v_5) \ + \ v_{11}) \\ \forall v_0.(s(s(v_0) \ + \ s(s(zero))) \ = \ s(s(s(zero \ + \ v_0))))) \end{array}$	50	7	8	29	33	26	37	32	33	44	33	32	50	49	37	25	47	34
nat/add_s_zero_mix_6 nat/add_s_zero_mix_9	$\begin{array}{lll} v_1)) &+& s(s(v_{11}) + (v_8 + s(v_3)))) &= \\ & s(s(s(v_3 + (v_{10} + (((s(s(v_1)) + s(s(v_6 + s(s(s(s(v_2))) + (v_8 + v_4)))) + v_{11})) + v_0) + \\ & s(s(zero) + s(s(v_7 + v_9))))))) + v_5) + v_{11}) \\ \forall v_0.(s(s(v_0) + s(s(zero))) &= s(s(s(zero + v_9)))) + v_0) + v_0) + v_0) + v_0 +$	50 50	7	8 4	29 17	33	26	37	32 12	33	31	33	32	50	49 40	37	25 13	30	34
nat/add_s_zero_mix_9 nat/equal	$\begin{array}{lll} v_1))) \ + \ s(s(v_{11}) \ + \ (v_8 \ + \ s(v_3)))) \ = \\ s(s(s(v_3 \ + \ (v_{10} \ + \ (((s(s(v_1)) \ + \ s(s(v_6 \ + \ s(s(s(s(v_2))) + (v_8 + v_4)))) + v_{11})) + v_0) + \\ s(s(s(s(v_2))) + (v_8 + v_4))))))) \ + v_1)) \ + v_2) \ + v_1) \\ \forall v_0.(s(s(v_0) \ + \ s(s(v_7 + v_9)))))) \ + v_2) \ + v_3.(s(v_2 + s(s(v_3 + s(v_0))) + v_1)) = \\ s(s(s(v_0) + v_1)) + (v_2 + s(s(v_3)))) \\ \forall x, y, z.(equal(x, y, z) = and(x = y, y = z)) \end{array}$										31							30	
nat/add_s_zero_mix_9 nat/equal nat/leq_1var_1_2occ	$\begin{array}{lll} v_1))) \ + \ s(s(v_{11}) \ + \ (v_8 \ + \ s(v_3)))) \ = \\ s(s(s(v_3 \ + \ (v_{10} \ + \ (((s(s(v_1)) \ + \ s(s(v_6 \ + \ s(s(s(s(s(v_2))) + (v_8 + v_4)))) + v_{11})) + v_0) + \\ s(s(s(s(v_2))) + (v_8 + v_4)))))) + v_{11})) + v_0) + \\ s(s(s(v_0) + s(s(v_7 + v_9))))))) + v_5) + v_{11}) \\ \forall v_0.(s(s(v_0) + s(s(zero))) \ = \ s(s(s(s(zero + v_0))))) \\ \forall v_0, v_1, v_2, v_3.(s(v_2 + s(s(s(v_3 + s(v_0))) + v_1)) = \\ s(s(s(v_0) + v_1)) + (v_2 + s(s(v_3)))) \\ \forall x, y, z.(equal(x, y, z) = and(x = y, y = z)) \\ \forall v_0.(v_0 \le v_0 + v_0) \end{array}$	50 4 1	7 1 0	4 0 1	17 2 0	18 4 0	10 2 0	30	12 1 0	14 1 0	31 1 1	10 2 1	8 2 1	37 2 1	40 2 1	31 1 0	13 0 0	30 4 0	12 2 0
nat/add_s_zero_mix_9 nat/equal nat/leq_1var_1_2occ nat/leq_1var_1_3occ	$\begin{array}{lll} v_1))) \ + \ s(s(v_{11}) \ + \ (v_8 \ + \ s(v_3)))) \ = \\ s(s(s(v_3 \ + \ (v_{10} \ + \ (((s(s(v_1)) \ + \ s(s(v_6 \ + \ s(s(s(s(s(v_2))) + (v_8 + v_4)))) + v_{11})) + v_0) + \\ s(s(s(s(v_2))) + (v_8 + v_4)))))) + v_{11})) + v_0) + \\ s(s(s(v_0) + s(s(v_7 + v_9))))))) + v_5) + v_{11}) \\ \forall v_0.(s(s(v_0) + s(s(zero))) \ = \ s(s(s(s(zero + v_0)))))) \\ \forall v_0, v_1, v_2, v_3.(s(v_2 + s(s(s(v_3 + s(v_0))) + v_1)) = \\ s(s(s(v_0) + v_1)) + (v_2 + s(s(v_3)))) \\ \forall x, y, z.(equal(x, y, z) = and(x = y, y = z)) \\ \forall v_0.(v_0 \le v_0 + v_0) \\ \forall v_0.(v_0 \le (v_0 + v_0) + v_0) \end{array}$	50 4 1 2	7 1 0 0	4 0 1 2	17 2 0 0	18 4 0 0	10 2 0 0	30 2 0 0	12 1 0 0	14 1 0 0	31 1 1 1	10 2 1 2	8 2 1 2	37 2 1 2	40 2 1 2	31 1 0 0	13 0 0 2	30 4 0 2	12 2 0 0
nat/add_s_zero_mix_9 nat/equal nat/leq_1var_1_2occ nat/leq_1var_1_3occ nat/leq_1var_1_4occ	$\begin{array}{lll} v_1))) \ + \ s(s(v_{11}) \ + \ (v_8 \ + \ s(v_3)))) \ = \\ s(s(s(v_3 \ + \ (v_{10} \ + \ (((s(s(v_1)) \ + \ s(s(v_6 \ + \ s(s(s(s(s(v_2))) + (v_8 + v_4)))) + v_{11})) + v_0) \ + \\ s(s(s(s(v_2))) \ + \ (v_8 + v_4)))))) \ + v_{11})) \ + v_0.\\ s(s(s(v_0) \ + \ s(s(v_7 \ + v_9)))))) \ = \ s(s(s(v_0) \ + \ s(s(v_7 \ + v_9))))) \\ \forall v_0, (v_1, v_2, v_3.(s(v_2 + s(s(s(v_3 + s(v_0))) + v_1)) = \\ s(s(s(v_0) \ + v_1)) \ + (v_2 + s(s(v_3)))) \\ \forall x, y, z.(equal(x, y, z) = and(x = y, y = z)) \\ \forall v_0.(v_0 \le v_0 + v_0) \\ \forall v_0.(v_0 \le (v_0 + v_0) + v_0) \\ \forall v_0.(v_0 \le v_0 \ + (v_0 + (v_0 + v_0))) \end{array}$	50 4 1 2 5	7 1 0 0 0	4 0 1 2 5	17 2 0 0 0	18 4 0 0 0	10 2 0 0 0	30 2 0 0 0	12 1 0 0 0	14 1 0 0 0	31 1 1 1 3	10 2 1 2 5	8 2 1 2 5	37 2 1 2 5	40 2 1 2 5	31 1 0 0 0	13 0 0 2 4	30 4 0 2 5	12 2 0 0 0
nat/add_s_zero_mix_9 nat/equal nat/leq_1var_1_2occ nat/leq_1var_1_3occ nat/leq_1var_1_4occ nat/leq_1var_1_5occ	$\begin{array}{l} v_1))) \ + \ s(s(v_{11}) \ + \ (v_8 \ + \ s(v_3)))) \ = \\ s(s(s(v_3 \ + \ (v_{10} \ + \ (((s(s(v_1)) \ + \ s(s(v_6 \ + \ s(s(s(s(s(v_2))) + (v_8 + v_4)))) + v_{11})) + v_0) \ + \\ s(s(s(s(v_0)) + (s(s(v_7 + v_9))))))) \ + v_5) \ + v_{11}) \\ \forall v_0.(s(s(v_0) \ + \ s(s(v_7 + v_9)))))) \ = \ s(s(s(s(v_7 + v_9))))) \\ \forall v_0.(s(s(v_0) \ + \ s(s(v_7 + v_9))))) \ + v_0.(s(s(v_0) + s(s(v_3 + s(v_0))) + v_1)) = \\ s(s(s(v_0) + v_1)) \ + (v_2 + s(s(v_3)))) \\ \forall v_0.(v_1, v_2, v_3.(s(v_2 + s(s(s(v_3 + s(v_0))) + v_1)) = \\ s(s(s(v_0) + v_1)) \ + (v_2 + s(s(v_3)))) \\ \forall v_3.(s(v_0) \ + v_0) \\ \forall v_0.(v_0 \ \leq v_0 + v_0) \\ \forall v_0.(v_0 \ \leq v_0 + (v_0 + (v_0 + v_0))) \\ \forall v_0.(v_0 \ \leq v_0 + (v_0 + (v_0 + (v_0 + v_0)))) \end{array}$	50 4 1 2 5 14	7 1 0 0 0 0	4 0 1 2 5 14	17 2 0 0 0 0	18 4 0 0 0 0	10 2 0 0 0 0	30 2 0 0 0 0	12 1 0 0 0 0	14 1 0 0 0 0	31 1 1 1 3 7	10 2 1 2 5 14	8 2 1 2 5 14	37 2 1 2 5 14	40 2 1 2 5 14	31 1 0 0 0 0	13 0 0 2 4 12	30 4 0 2 5 14	12 2 0 0 0 0
nat/add_s_zero_mix_9 nat/equal nat/leq_1var_1_2occ nat/leq_1var_1_3occ nat/leq_1var_1_4occ nat/leq_1var_1_5occ nat/leq_1var_2_3occ	$\begin{array}{l} v_1))) \ + \ s(s(v_{11}) \ + \ (v_8 \ + \ s(v_3)))) \ = \\ s(s(s(v_3 \ + \ (v_{10} \ + \ (((s(s(v_1)) \ + \ s(s(v_6 \ + \ s(s(s(s(s(v_2))) + (v_8 + v_4)))) + v_{11})) + v_0) \ + \\ s(s(s(s(v_2))) \ + \ (v_8 + v_4))))))) \ + v_{11})) \ + v_0) \ + \\ s(s(s(v_0) \ + \ s(s(v_7 \ + v_9))))))) \ = \ s(s(s(v_0) \ + \ s(s(v_7 \ + v_9))))) \ + \\ \forall v_0, (v_1, v_2, v_3.(s(v_2 + s(s(s(v_3 + s(v_0))) + v_1)) = \\ s(s(s(v_0) \ + v_1)) \ + (v_2 + s(s(v_3)))) \ \\ \forall v_0, (v_1, v_2, v_3.(s(v_2 + s(s(s(v_3 + s(v_0))) + v_1)) = \\ s(s(s(v_0) \ + v_1)) \ + (v_2 + s(s(v_3)))) \ \\ \forall v_1, v_2, (equal(x, y, z) = and(x = y, y = z)) \ \\ \forall v_2, (equal(x, y, z) = and(x = y, y = z)) \ \\ \forall v_3, (v_1, v_2, v_3, v_2, v_3, v_3, v_4, v_4, v_5) \ \\ \forall v_2, (v_1, v_2, v_3, v_3, v_4, v_4, v_5) \ \\ \forall v_3, (v_1, v_2, v_3, v_4, v_4, v_5, v_4, v_5, v_4, v_5, v_5, v_4, v_5, v_5, v_5, v_5, v_5, v_5, v_6, v_6, v_6, v_6, v_6, v_6, v_6, v_6$	50 4 1 2 5 14 2	7 1 0 0 0 0 0	4 0 1 2 5 14 2	17 2 0 0 0 0 0	18 4 0 0 0 0 0	10 2 0 0 0 0	30 2 0 0 0 0	12 1 0 0 0 0 0	14 1 0 0 0 0	31 1 1 1 3 7 1	10 2 1 2 5 14 2	8 2 1 2 5 14 2	37 2 1 2 5 14 1	40 2 1 2 5 14 1	31 1 0 0 0 0 0	13 0 0 2 4 12 2	30 4 0 2 5 14 0	12 2 0 0 0 0 0
nat/add_s_zero_mix_9 nat/equal nat/leq_1var_1_2occ nat/leq_1var_1_3occ nat/leq_1var_1_4occ nat/leq_1var_1_5occ nat/leq_1var_2_3occ nat/leq_1var_2_4occ	$\begin{array}{l} v_1))) \ + \ s(s(v_{11}) \ + \ (v_8 \ + \ s(v_3)))) \ = \\ s(s(s(v_3 \ + \ (v_{10} \ + \ (((s(s(v_1)) \ + \ s(s(v_6 \ + \ s(s(s(s(s(v_2))) + (v_8 + v_4)))) + v_{11})) + v_0) \ + \\ s(s(s(s(v_2))) \ + \ (v_8 + v_4))))))) \ + v_{11})) \ + v_0) \ + \\ s(s(zero) \ + \ s(s(v_7 + v_9))))))) \ + v_5) \ + v_{11}) \ \\ \forall v_0.(s(s(v_0) \ + \ s(s(zero))) \ = \ s(s(s(s(zero \ + \ v_0)))))) \ \\ \forall v_0.(s(s(v_0) \ + \ s(s(zero)))) \ = \ s(s(s(s(zero \ + \ v_0))))) \ \\ \forall v_0, v_1, v_2, v_3.(s(v_2 + s(s(s(v_3 + s(v_0))) + v_1)) \ = \ s(s(s(v_0) + v_1)) + (v_2 + s(s(v_3)))) \ \\ \forall v_0, v_1, v_2, v_3.(s(v_2 + s(s(s(v_3 + s(v_0))) + v_1)) \ \\ \forall v_1, v_2, v_2.(equal(x, y, z) \ = \ and(x = y, y = z)) \ \\ \forall v_2, v_3, v_4.(equal(x, y, z) \ = \ and(x = y, y = z)) \ \\ \forall v_2, v_3, v_4.(equal(x, y, z) \ = \ and(x = y, y = z)) \ \\ \forall v_2, v_3, v_4.(equal(x, y, z) \ = \ and(x = y, y = z)) \ \\ \forall v_2, v_3, v_4.(equal(x, y, z) \ = \ and(x = y, y = z)) \ \\ \forall v_3, v_4.(equal(x, y, z) \ = \ and(x = y, y = z)) \ \\ \forall v_4, v_5, v_6.(equal(x, y, z) \ = \ and(x = y, y = z)) \ \\ \forall v_6.(v_6 \ \leq v_6 + v_0) \ + (v_6 + v_0))) \ \\ \forall v_6.(v_6 \ \leq v_6 + (v_6 + (v_6 + v_6))) \ \\ \forall v_6.(v_6 \ \leq v_6 + (v_6 + (v_6 + v_6))) \ \\ \forall v_6.(v_6 \ + v_6 \ \leq v_6 + (v_6 + v_6)) \ \\ \forall v_6.(v_6 \ + v_6 \ \leq v_6 + (v_6 + v_6)) \ \\ \forall v_6.(v_6 \ + v_6 \ \leq v_6 + (v_6 + v_6)) \ \\ \end{aligned}$	50 4 1 2 5 14 2 5	7 1 0 0 0 0 0 0	4 0 1 2 5 14 2 5	17 2 0 0 0 0 0 0	18 4 0 0 0 0 0 0	10 2 0 0 0 0 0 0	30 2 0 0 0 0 0	12 1 0 0 0 0 0 0	14 1 0 0 0 0 0 0	31 1 1 1 3 7 1 2	10 2 1 2 5 14 2 1	8 2 1 2 5 14 2 2	37 2 1 2 5 14 1 2	40 2 1 2 5 14 1 0	31 1 0 0 0 0 0 0	13 0 0 2 4 12 2 2	30 4 0 2 5 14 0 5	12 2 0 0 0 0 0 0
nat/add_s_zero_mix_9 nat/equal nat/leq_1var_1_2occ nat/leq_1var_1_3occ nat/leq_1var_1_4occ nat/leq_1var_1_5occ nat/leq_1var_2_3occ nat/leq_1var_2_4occ nat/leq_1var_2_5occ	$\begin{array}{l} v_1))) \ + \ s(s(v_{11}) \ + \ (v_8 \ + \ s(v_3)))) \ = \\ s(s(s(v_3 \ + \ (v_{10} \ + \ (((s(s(v_1)) \ + \ s(s(v_6 \ + \ s(s(s(s(s(v_2))) + (v_8 + v_4)))) + v_{11})) + v_0) \ + \\ s(s(s(s(v_2))) \ + \ (v_8 + v_4))))))) \ + v_{11})) \ + v_0) \ + \\ s(s(zero) \ + \ s(s(v_7 + v_9))))))) \ + v_5) \ + v_{11}) \ \\ \forall v_0.(s(s(v_0) \ + \ s(s(zero))) \ = \ s(s(s(s(zero \ + \ v_0))))) \ \\ \forall v_0.(s(s(v_0) \ + \ s(s(zero)))) \ = \ s(s(s(s(zero \ + \ v_0)))) \ \\ \forall v_0.(v_1, v_2, v_3.(s(v_2 + s(s(s(v_3 + s(v_0))) + v_1)) = \ s(s(s(v_0) + v_1)) + (v_2 + s(s(v_3)))) \ \\ \forall v_0.(v_0 \le (s(v_0) + v_1)) \ + (v_2 + s(s(v_3)))) \ \\ \forall v_0.(v_0 \le v_0 + v_0) \ \\ \forall v_0.(v_0 \le (v_0 + v_0) + (v_0 + v_0))) \ \\ \forall v_0.(v_0 \le v_0 + (v_0 + (v_0 + v_0))) \ \\ \forall v_0.(v_0 + v_0 \le (v_0 + (v_0 + (v_0 + v_0))) + v_0) \ \\ \forall v_0.(v_0 + v_0 \le (v_0 + (v_0 + (v_0 + v_0))) + v_0) \ \end{array}$	50 4 1 2 5 14 2 5 14	7 1 0 0 0 0 0 0 0	4 0 1 2 5 14 2 5 14	17 2 0 0 0 0 0 0 0 0	18 4 0 0 0 0 0 0 0	10 2 0 0 0 0 0 0 0	30 2 0 0 0 0 0 0 0	12 1 0 0 0 0 0 0 0	14 1 0 0 0 0 0 0 0	31 1 1 1 3 7 1 2 5	10 2 1 2 5 14 2 1 0	8 2 1 2 5 14 2 2 5	37 2 1 2 5 14 1 2 5	2 1 2 5 14 1 0	31 1 0 0 0 0 0 0 0	13 0 0 2 4 12 2 2 6	30 4 0 2 5 14 0 5 14	12 2 0 0 0 0 0 0 0
nat/add_s_zero_mix_9 nat/equal nat/leq_1var_1_2occ nat/leq_1var_1_3occ nat/leq_1var_1_4occ nat/leq_1var_1_5occ nat/leq_1var_2_3occ nat/leq_1var_2_4occ nat/leq_1var_2_5occ nat/leq_1var_2_5occ nat/leq_1var_2_6occ	$\begin{array}{l} v_1))) \ + \ s(s(v_{11}) \ + \ (v_8 \ + \ s(v_3)))) \ = \\ s(s(s(v_3 \ + \ (v_{10} \ + \ (((s(s(v_1)) \ + \ s(s(v_6 \ + \ s(s(s(s(s(v_2))) + (v_8 + v_4)))) + v_{11})) + v_0) \ + \\ s(s(s(s(v_2))) \ + \ (v_8 + v_4)))))))) \ + v_5) \ + v_{11}) \\ \forall v_0.(s(s(v_0) \ + \ s(s(v_7 + v_9))))))) \ + v_5) \ + v_{11}) \\ \forall v_0.(s(s(v_0) \ + \ s(s(zero))) \ = \ s(s(s(s(zero \ + \ v_0))))) \\ \forall v_0, v_1, v_2, v_3.(s(v_2 + s(s(s(v_3 + s(v_0))) + v_1)) = \\ s(s(s(v_0) + v_1)) \ + (v_2 + s(s(v_3)))) \\ \forall x, y, z.(equal(x, y, z) \ = \ and(x = y, y = z)) \\ \forall v_0.(v_0 \le v_0 + v_0) \\ \forall v_0.(v_0 \le (v_0 + v_0) + v_0) \\ \forall v_0.(v_0 \le (v_0 + v_0) + (v_0 + v_0))) \\ \forall v_0.(v_0 \le v_0 + (v_0 + (v_0 + v_0))) \\ \forall v_0.(v_0 + v_0 \le (v_0 + (v_0 + (v_0 + v_0))) + v_0) \\ \forall v_0.(v_0 + v_0 \le (v_0 + (v_0 + (v_0 + v_0))) + v_0) \\ \forall v_0.(v_0 + v_0 \le (v_0 + ((v_0 + (v_0 + (v_0 + v_0))))) \end{array}$	50 4 1 2 5 14 2 5 14 42	7 1 0 0 0 0 0 0 0 0	4 0 1 2 5 14 2 5 14 42	17 2 0 0 0 0 0 0 0 0	18 4 0 0 0 0 0 0 0 0	10 2 0 0 0 0 0 0 0 0	30 2 0 0 0 0 0 0 0	12 1 0 0 0 0 0 0 0 0	14 1 0 0 0 0 0 0 0 0	31 1 1 1 3 7 1 2 5 13	10 2 1 2 5 14 2 1 0	8 2 1 2 5 14 2 5 16	37 2 1 2 5 14 1 2 5 14	2 1 2 5 14 1 0 0	31 1 0 0 0 0 0 0 0	13 0 0 2 4 12 2 2 6 11	30 4 0 2 5 14 0 5 14 42	12 2 0 0 0 0 0 0 0 0 0
nat/add_s_zero_mix_9 nat/equal nat/leq_1var_1_2occ nat/leq_1var_1_3occ nat/leq_1var_1_4occ nat/leq_1var_1_5occ nat/leq_1var_2_3occ nat/leq_1var_2_4occ nat/leq_1var_2_5occ	$\begin{array}{l} v_1))) \ + \ s(s(v_{11}) \ + \ (v_8 \ + \ s(v_3)))) \ = \\ s(s(s(v_3 \ + \ (v_{10} \ + \ (((s(s(v_1)) \ + \ s(s(v_6 \ + \ s(s(s(s(s(v_2))) + (v_8 + v_4)))) + v_{11})) + v_0) \ + \\ s(s(s(s(v_2))) \ + \ (v_8 + v_4))))))) \ + v_{11})) \ + v_0) \ + \\ s(s(zero) \ + \ s(s(v_7 + v_9))))))) \ + v_5) \ + v_{11}) \ \\ \forall v_0.(s(s(v_0) \ + \ s(s(zero))) \ = \ s(s(s(s(zero \ + \ v_0))))) \ \\ \forall v_0.(s(s(v_0) \ + \ s(s(zero)))) \ = \ s(s(s(s(zero \ + \ v_0)))) \ \\ \forall v_0.(v_1, v_2, v_3.(s(v_2 + s(s(s(v_3 + s(v_0))) + v_1)) = \ s(s(s(v_0) + v_1)) + (v_2 + s(s(v_3)))) \ \\ \forall v_0.(v_0 \le (s(v_0) + v_1)) \ + (v_2 + s(s(v_3)))) \ \\ \forall v_0.(v_0 \le v_0 + v_0) \ \\ \forall v_0.(v_0 \le (v_0 + v_0) + (v_0 + v_0))) \ \\ \forall v_0.(v_0 \le v_0 + (v_0 + (v_0 + v_0))) \ \\ \forall v_0.(v_0 + v_0 \le (v_0 + (v_0 + (v_0 + v_0))) + v_0) \ \\ \forall v_0.(v_0 + v_0 \le (v_0 + (v_0 + (v_0 + v_0))) + v_0) \ \end{array}$	50 4 1 2 5 14 2 5 14	7 1 0 0 0 0 0 0 0	4 0 1 2 5 14 2 5 14	17 2 0 0 0 0 0 0 0 0	18 4 0 0 0 0 0 0 0	10 2 0 0 0 0 0 0 0	30 2 0 0 0 0 0 0 0	12 1 0 0 0 0 0 0 0	14 1 0 0 0 0 0 0 0	31 1 1 1 3 7 1 2 5	10 2 1 2 5 14 2 1 0	8 2 1 2 5 14 2 2 5	37 2 1 2 5 14 1 2 5	2 1 2 5 14 1 0	31 1 0 0 0 0 0 0 0	13 0 0 2 4 12 2 2 6	30 4 0 2 5 14 0 5 14	12 2 0 0 0 0 0 0 0 0

				2	\$) ^N CUC!	Gen	J. Gerr	1.9 X20	ipite Vali	ije ç	igite ca	ire &	igite ge	pire ser	ive st	den Jen		lewite lipper?
benchmark set	example	count	ACT.	R ACT	22 CYC		[*] ريا ^د	Jana Tana	16 1 37	ipire Vair	is, Asin	ib, Asin	18. 18II	ib, Asin	18 Jaili	S. Asil	Dir Jeng	o lip?	lipper?
nat/leq_1var_3_6occ	$\forall v_0.(v_0 + (v_0 + v_0) \le (v_0 + v_0) + ((v_0 + (v_0 + v_0) + (v_0 + v_0) + (v_0 + v_0) + (v_0 + v_0))$	50	0	0	0	0	0	0	0	0	8	0	11	10	0	0	17	50	0
, -	$(v_0) + (v_0)$																		I
$nat/leq_1var_3_7occ$	$ \forall v_0.(v_0 + (v_0 + v_0) \le (v_0 + ((v_0 + v_0) + (v_0 + (v_0 + v_0)))) + v_0) $	50	0	0	0	0	0	0	0	0	9	0	9	9	0	0	28	50	0
nat/leq_1var_4-cc	$\forall v_0.(v_0 + ((v_0 + v_0) + v_0) \le (v_0 + (v_0 + v_0)) + v_0)$	20	0	0	0	20	0	0	0	0	0	0	3	2	0	0	4	20	0
$nat/leq_1var_4_5occ$	$ \forall v_0.(v_0 + ((v_0 + v_0) + v_0) \le (v_0 + (v_0 + (v_0 + v_0))) + v_0) $	50	0	0	0	0	0	0	0	0	4	0	8	7	0	0	10	0	0
$nat/leq_1var_4_6occ$	$ \forall v_0.((v_0 + v_0) + (v_0 + v_0) \le (v_0 + (v_0 + v_0)) + (v_0 + (v_0 + v_0))) $	50	0	0	0	0	0	0	0	0	3	0	2	4	0	0	15	50	0
$nat/leq_1var_4_7occ$	$ \begin{vmatrix} \forall v_0 . ((v_0 + v_0) + (v_0 + v_0) \le (((v_0 + v_0) + v_0) + (v_0 + (v_0 + v_0))) \end{vmatrix} $	50	0	0	0	0	0	0	0	0	2	0	2	2	0	0	7	50	0
$nat/leq_1var_4_8occ$	$ \forall v_0.(v_0 + (v_0 + (v_0 + v_0)) \le v_0 + ((v_0 + v_0) + (v_0 + ((v_0 + v_0) + (v_0 + v_0))))) $	50	0	0	0	0	0	0	0	0	4	0	4	4	0	0	10	50	0
$nat/leq_1var_5_5occ$	$ \forall v_0.((v_0 + v_0) + (v_0 + (v_0 + v_0)) \le (v_0 + v_0) + ((v_0 + v_0) + v_0)) $	50	0	0	0	50	0	0	0	0	3	0	3	2	0	0	8	50	0
$nat/leq_1var_5_6occ$	$ \forall v_0.(v_0 + ((v_0 + v_0) + (v_0 + v_0)) \le v_0 + (((v_0 + v_0) + v_0)) $	50	0	0	0	0	0	0	0	0	0	0	1	1	0	0	6	0	0
$nat/leq_1var_5_7occ$	$ \forall v_0.((v_0 + (v_0 + v_0)) + (v_0 + v_0) \le (v_0 + ((v_0 + (v_0 + v_0)) + (v_0 + v_0))) + v_0) $	50	0	0	0	0	0	0	0	0	3	0	2	2	0	0	12	50	0
nat/leq_1var_5_8occ	$ \forall v_0.((v_0 + v_0) + (v_0 + (v_0 + v_0)) \le ((v_0 + (v_0 + v_0)) + (v_0 + v_0)) + (v_0 + v_0)) $	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	50	0
$nat/leq_1var_5_9occ$	$ \forall v_0.((v_0 + v_0) + (v_0 + (v_0 + v_0)) \le (v_0 + ((v_0 + v_0) + (v_0 + v_0)) + (v_0 + ((v_0 + v_0) + v_0))) $	50	0	0	0	0	0	0	0	0	3	0	2	2	0	0	9	50	0
$nat/leq_2var_1_2occ$	$\forall x, y. (x \le x + y)$	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
nat/mul_assoc_1var_3occ	$\forall x.(x \times (x \times x) = (x \times x) \times x)$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
nat/mul_assoc_3var	$\forall x, y, z. (x \times (y \times z) = (x \times y) \times z)$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
nat/mul_comm	$\forall x, y.(x \times y = y \times x)$	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
nat/mul_distributvity	$\forall x, y, z.((x+y) \times z = (z \times x) + (y \times z))$	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
tree/flatten0_flatten2	$\forall t, l.(flatten0(t) ++ l = flatten2(t, l))$	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
tree/flatten0_rotate_3var	$ \forall p, x, y. (flatten0(node(node(p, x, p), y, p)) = flatten0(node(p, x, node(p, y, p)))) $	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
$tree/flatten0_rotate_5var$	$ \begin{vmatrix} \forall p, q, r, x, y. (flatten0(node(node(p, x, q), y, r)) = \\ flatten0(node(p, x, node(q, y, r)))) \end{vmatrix} $	1	0	0	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0