

Logiweb codex of pogave

Up Help

S, Neg, MP, Gen, Ded, S1, S2, S3, S4, S5, S6, S7, S8, S9, Prop 3.2a, Prop 3.2b, Prop 3.2c, Prop 3.2d, Prop 3.2e, Prop 3.2f, Prop 3.2g, Prop 3.2h, pogave, rule div, S10, Prop 3.2i, Prop 3.2j₁, Prop 3.2j₂, Prop 3.2j, Prop 3.2k₁, Prop 3.2k₂, Prop 3.2k, Prop 3.2l₁, Prop 3.2l₂, Prop 3.2l, Prop 3.2m₁, Prop 3.2m₂, Prop 3.2m, Prop 3.2n₁, Prop 3.2n₂, Prop 3.2n, Prop 3.2o, Prop 3.4a₁, Prop 3.4a₂, Prop 3.4a, Prop 3.4b, Prop 3.4c₁, Prop 3.4c₂, Prop 3.4c, Prop 3.4d₁, Prop 3.4d₂, Prop 3.4d, *||*,

S

[S $\xrightarrow{\text{stmt}}$ x]

Neg

[Neg $\xrightarrow{\text{proof}}$ Rule tactic]

[Neg $\xrightarrow{\text{stmt}}$ S $\vdash \forall \underline{a}: \forall \underline{b}: \neg \underline{b} \Rightarrow \neg \underline{a} \vdash \neg \underline{b} \Rightarrow \underline{a} \vdash \underline{b}$]

MP

[MP $\xrightarrow{\text{proof}}$ Rule tactic]

[MP $\xrightarrow{\text{stmt}}$ S $\vdash \forall \underline{a}: \forall \underline{b}: \underline{a} \Rightarrow \underline{b} \vdash \underline{a} \vdash \underline{b}$]

Gen

[Gen $\xrightarrow{\text{proof}}$ Rule tactic]

[Gen $\xrightarrow{\text{stmt}}$ S $\vdash \forall \underline{x}: \forall \underline{a}: \underline{a} \vdash \forall_{\text{obj} \underline{x}} \underline{a}$]

Ded

[Ded $\xrightarrow{\text{proof}}$ Rule tactic]

[Ded $\xrightarrow{\text{stmt}}$ S $\vdash \forall \underline{a}: \forall \underline{b}: \lambda x. \text{Ded}_0([\underline{a}], [\underline{b}]) \Vdash \underline{a} \vdash \underline{b}$]

S1

[S1 $\xrightarrow{\text{proof}}$ Rule tactic]

[S1 $\xrightarrow{\text{stmt}}$ S $\vdash \forall \underline{a}: \forall \underline{b}: \forall \underline{c}: \underline{a} = \underline{b} \vdash \underline{a} = \underline{c} \vdash \underline{b} = \underline{c}$]

S2

[S2 $\xrightarrow{\text{proof}}$ Rule tactic]

[S2 $\xrightarrow{\text{stmt}}$ S $\vdash \forall \underline{a}: \forall \underline{b}: \underline{a} = \underline{b} \vdash \underline{a}' = \underline{b}'$]

S3

[S3 $\xrightarrow{\text{proof}}$ Rule tactic]

[S3 $\xrightarrow{\text{stmt}}$ S $\vdash \forall \underline{a}: \neg 0 = \underline{a}'$]

S4

[S4 $\xrightarrow{\text{proof}}$ Rule tactic]

[S4 $\xrightarrow{\text{stmt}}$ S $\vdash \forall \underline{a}: \forall \underline{b}: \underline{a}' = \underline{b}' \vdash \underline{a} = \underline{b}$]

S5

[S5 $\xrightarrow{\text{proof}}$ Rule tactic]

[S5 $\xrightarrow{\text{stmt}}$ S $\vdash \forall \underline{a}: \underline{a} + 0 = \underline{a}$]

S6

[S6 $\xrightarrow{\text{proof}}$ Rule tactic]

[S6 $\xrightarrow{\text{stmt}}$ S $\vdash \forall \underline{a}: \forall \underline{b}: \underline{a} + \underline{b}' = \underline{a} + \underline{b}'$]

S7

[S7 $\xrightarrow{\text{proof}}$ Rule tactic]

[S7 $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \underline{a} \cdot 0 = 0$]

S8

[S8 $\xrightarrow{\text{proof}}$ Rule tactic]

[S8 $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \underline{a} \cdot \underline{b}' = \underline{a} \cdot \underline{b} + \underline{a}$]

S9

[S9 $\xrightarrow{\text{proof}}$ Rule tactic]

[S9 $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{x}: \forall \underline{a}: \forall \underline{b}: \forall \underline{c}: \langle [\underline{b}] \equiv^0 [\underline{a}] \mid [\underline{x}] := [0] \rangle \Vdash \langle [\underline{c}] \equiv^0 [\underline{a}] \mid [\underline{x}] := [\underline{x}'] \rangle \Vdash \underline{b} \vdash \underline{a} \Rightarrow \underline{c} \vdash \underline{a}$]

Prop 3.2a

[Prop 3.2a $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \underline{a} = \underline{a}$]

Prop 3.2b

[Prop 3.2b $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \underline{a} = \underline{b} \vdash \underline{b} = \underline{a}$]

Prop 3.2c

[Prop 3.2c $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \forall \underline{c}: \underline{a} = \underline{b} \vdash \underline{b} = \underline{c} \vdash \underline{a} = \underline{c}$]

Prop 3.2d

[Prop 3.2d $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \forall \underline{c}: \underline{a} = \underline{c} \vdash \underline{b} = \underline{c} \vdash \underline{a} = \underline{b}$]

Prop 3.2e

[Prop 3.2e $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \forall \underline{c}: \underline{a} = \underline{b} \vdash \underline{a} + \underline{c} = \underline{b} + \underline{c}$]

Prop 3.2f

[Prop 3.2f $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \underline{a} = 0 + \underline{a}$]

Prop 3.2g

[Prop 3.2g $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \underline{a}' + \underline{b} = \underline{a} + \underline{b}'$]

Prop 3.2h

[Prop 3.2h $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \underline{a} + \underline{b} = \underline{b} + \underline{a}$]

pogave

[pogave $\xrightarrow{\text{prio}}$

Preassociative

[pogave], [base], [bracket * end bracket], [big bracket * end bracket], [\$ * \$],
[flush left [*]], [x], [y], [z], [[* \bowtie *]], [[* \rightarrow *]], [pyk], [tex], [name], [prio], [*, [T],
[if(*, *, *)], [[* $\xrightarrow{*}$ *]], [val], [claim], [\perp], [f(*)], [(*)^I], [F], [0], [1], [2], [3], [4], [5], [6],
[7], [8], [9], [0], [1], [2], [3], [4], [5], [6], [7], [8], [9], [a], [b], [c], [d], [e], [f], [g], [h], [i], [j],
[k], [l], [m], [n], [o], [p], [q], [r], [s], [t], [u], [v], [w], [(*)^M], [If(*, *, *)],
[array{*} * end array], [l], [c], [r], [empty], [(< * | * := *)], [\mathcal{M} (*)], [$\tilde{\mathcal{U}}$ (*)], [\mathcal{U} (*)],
[\mathcal{U}^M (*)], [apply(*, *)], [apply₁(*, *)], [identifier(*)], [identifier₁(*, *)], [array-
plus(*, *)], [array-remove(*, *, *)], [array-put(*, *, *, *)], [array-add(*, *, *, *, *)],
[bit(*, *)], [bit₁(*, *)], [rack], ["vector"], ["bibliography"], ["dictionary"],
["body"], ["codex"], ["expansion"], ["code"], ["cache"], ["diagnose"], ["pyk"],
["tex"], ["texname"], ["value"], ["message"], ["macro"], ["definition"],
["unpack"], ["claim"], ["priority"], ["lambda"], ["apply"], ["true"], ["if"],
["quote"], ["proclaim"], ["define"], ["introduce"], ["hide"], ["pre"], ["post"],
[\mathcal{E} (*, *, *)], [\mathcal{E}_2 (*, *, *, *, *)], [\mathcal{E}_3 (*, *, *, *, *)], [\mathcal{E}_4 (*, *, *, *, *)], [lookup(*, *, *)],
[abstract(*, *, *, *, *)], [[*]], [\mathcal{M} (*, *, *, *)], [\mathcal{M}_2 (*, *, *, *, *)], [\mathcal{M}^* (*, *, *, *)], [macro],
[s₀], [zip(*, *)], [assoc₁(*, *, *, *)], [(*)^P], [self], [[* \doteq *]], [[* $\dot{=}$ *]], [[* $\dot{=}$ *]],
[[* $\stackrel{\text{pyk}}{=}$ *]], [[* $\stackrel{\text{tex}}{=}$ *]], [[* $\stackrel{\text{name}}{=}$ *]], [Priority table[*]], [$\tilde{\mathcal{M}}_1$], [$\tilde{\mathcal{M}}_2$ (*)], [$\tilde{\mathcal{M}}_3$ (*)],
[$\tilde{\mathcal{M}}_4$ (*, *, *, *, *)], [\mathcal{M} (*, *, *)], [$\tilde{\mathcal{Q}}$ (*, *, *, *)], [$\tilde{\mathcal{Q}}_2$ (*, *, *, *)], [$\tilde{\mathcal{Q}}_3$ (*, *, *, *, *)], [$\tilde{\mathcal{Q}}^*$ (*, *, *, *)],
[(*)], [(*)], [display(*)], [statement(*)], [[*][.]], [[*]⁻], [aspect(*, *)],

[aspect(*, *, *), [*****], [**tuple**₁(*)], [**tuple**₂(*)], [let₂(*, *)], [let₁(*, *)],
 [* ^{claim} *], [checker], [**check**(*, *, *)], [**check**₂(*, *, *)], [**check**₃(*, *, *)],
 [**check**^{*}(*, *)], [**check**₂^{*}(*, *, *)], [* ·], [* -], [* °], [msg], [* ^{msg} *], [<stmt >],
 [stmt], [* ^{stmt} *], [HeadNil'], [HeadPair'], [Transitivity'], [⊥], [Contra'], [T_E'],
 [L₁], [*], [A], [B], [C], [D], [E], [F], [G], [H], [I], [J], [K], [L], [M], [N], [O], [P], [Q],
 [R], [S], [T], [U], [V], [W], [X], [Y], [Z], [* | * := *], [* * | * := *], [∅], [Remainder],
 [* ∨], [intro(*, *, *, *)], [intro(*, *, *)], [error(*, *)], [error₂(*, *)], [proof(*, *, *)],
 [proof₂(*, *)], [S(*, *)], [S^I(*, *)], [S[▷](*, *)], [S[▷]₁(*, *, *)], [S^E(*, *)], [S^E₁(*, *, *)],
 [S⁺(*, *)], [S⁺₁(*, *, *)], [S⁻(*, *)], [S⁻₁(*, *, *)], [S^{*}(*, *)], [S^{*}₁(*, *, *)],
 [S₂^{*}(*, *, *, *)], [S[⊗](*, *)], [S[⊗]₁(*, *, *)], [S⁺(*, *)], [S⁺₁(*, *, *, *)], [S⁺(*, *)],
 [S⁺₁(*, *, *, *)], [S^{i.e.}(*, *)], [S^{i.e.}₁(*, *, *, *)], [S^{i.e.}₂(*, *, *, *, *)], [S[∨](*, *)],
 [S[∨]₁(*, *, *, *)], [Sⁱ(*, *)], [Sⁱ₁(*, *, *)], [Sⁱ₂(*, *, *, *)], [T(*)], [claims(*, *, *)],
 [claims₂(*, *, *)], [<proof >], [proof], [**Lemma** * : *], [**Proof of** * : *],
 [* lemma * : *], [* antilemma * : *], [* rule * : *], [* antirule * : *],
 [verifier], [V₁(*)], [V₂(*, *)], [V₃(*, *, *, *)], [V₄(*, *)], [V₅(*, *, *, *)], [V₆(*, *, *, *)],
 [V₇(*, *, *, *)], [Cut(*, *)], [Head_⊕(*)], [Tail_⊕(*)], [rule₁(*, *)], [rule(*, *)],
 [Rule tactic], [Plus(*, *)], [**Theory** *], [theory₂(*, *)], [theory₃(*, *)],
 [theory₄(*, *, *)], [HeadNil''], [HeadPair''], [Transitivity''], [Contra''], [HeadNil],
 [HeadPair], [Transitivity], [Contra], [T_E], [ragged right],
 [ragged right expansion], [parm(*, *, *)], [parm^{*}(*, *, *)], [inst(*, *)],
 [inst^{*}(*, *)], [occur(*, *, *)], [occur^{*}(*, *, *)], [unify(* = *, *)], [unify^{*}(* = *, *)],
 [unify₂(* = *, *)], [L_a], [L_b], [L_c], [L_d], [L_e], [L_f], [L_g], [L_h], [L_i], [L_j], [L_k], [L_l], [L_m],
 [L_n], [L_o], [L_p], [L_q], [L_r], [L_s], [L_t], [L_u], [L_v], [L_w], [L_x], [L_y], [L_z], [L_A], [L_B], [L_C],
 [L_D], [L_E], [L_F], [L_G], [L_H], [L_I], [L_J], [L_K], [L_L], [L_M], [L_N], [L_O], [L_P], [L_Q], [L_R],
 [L_S], [L_T], [L_U], [L_V], [L_W], [L_X], [L_Y], [L_Z], [L_?], [Reflexivity], [Reflexivity₁],
 [Commutativity], [Commutativity₁], [<tactic >], [tactic], [* ^{tactic} *], [P(*, *, *)],
 [P^{*}(*, *, *)], [p₀], [conclude₁(*, *)], [conclude₂(*, *, *)], [conclude₃(*, *, *, *)],
 [conclude₄(*, *)], [check], [* ^o *], [RootVisible(*)], [A], [R], [C], [T], [L], [* *], [*],
 [a], [b], [c], [d], [e], [f], [g], [h], [i], [j], [k], [l], [m], [n], [o], [p], [q], [r], [s], [t], [u], [v],
 [w], [x], [y], [z], [* ≡ * | * := *], [* ≡⁰ * | * := *], [* ≡¹ * | * := *], [* ≡^{*} * | * := *],
 [Ded(*, *)], [Ded₀(*, *)], [Ded₁(*, *, *)], [Ded₂(*, *, *)], [Ded₃(*, *, *, *)],
 [Ded₄(*, *, *, *)], [Ded₄^{*}(*, *, *, *)], [Ded₅(*, *, *)], [Ded₆(*, *, *, *)],
 [Ded₆^{*}(*, *, *, *)], [Ded₇(*)], [Ded₈(*, *)], [Ded₈^{*}(*, *)], [S], [Neg], [MP], [Gen],
 [Ded], [S1], [S2], [S3], [S4], [S5], [S6], [S7], [S8], [S9], [Repetition], [A1'], [A2'], [A4'],
 [A5'], [Prop 3.2a], [Prop 3.2b], [Prop 3.2c], [Prop 3.2d], [Prop 3.2e₁], [Prop 3.2e₂],
 [Prop 3.2e], [Prop 3.2f₁], [Prop 3.2f₂], [Prop 3.2f], [Prop 3.2g₁], [Prop 3.2g₂],
 [Prop 3.2g], [Prop 3.2h₁], [Prop 3.2h₂], [Prop 3.2h], [Block₁(*, *, *)], [Block₂(*)],
 [rule div], [S10], [Prop 3.2i], [Prop 3.2j₁], [Prop 3.2j₂], [Prop 3.2j], [Prop 3.2k₁],
 [Prop 3.2k₂], [Prop 3.2k], [Prop 3.2l₁], [Prop 3.2l₂], [Prop 3.2l], [Prop 3.2m₁],
 [Prop 3.2m₂], [Prop 3.2m], [Prop 3.2n₁], [Prop 3.2n₂], [Prop 3.2n], [Prop 3.2o],
 [Prop 3.4a₁], [Prop 3.4a₂], [Prop 3.4a], [Prop 3.4b], [Prop 3.4c₁], [Prop 3.4c₂],
 [Prop 3.4c], [Prop 3.4d₁], [Prop 3.4d₂], [Prop 3.4d];

Preassociative

[* - { * }], [* /indexintro(*, *, *, *)], [* /intro(*, *, *)], [* /bothintro(*, *, *, *)],
 [* /nameintro(*, *, *, *)], [* '], [* [*]], [* [* → *]], [* [* ⇒ *]], [* 0], [* 1], [0b], [* -color(*)],

[*-color*(*)], [*H], [*T], [*U], [*h], [*t], [*s], [*c], [*d], [*a], [*C], [*M], [*B], [*F], [*i], [*d], [*R], [*0], [*1], [*2], [*3], [*4], [*5], [*6], [*7], [*8], [*9], [*E], [*V], [*C], [*C[#]], [*hide];

Preassociative

[“ * ”], [], [(*)^t], [string(*) + *], [string(*) ++ *], [*, [*, [!*, [!*, [##*, [\$*], [%*], [&*, [’*, [(*)], [)], [**], [+*], [*, [-*], [.*], [/ *], [0*], [1*], [2*], [3*], [4*], [5*], [6*], [7*], [8*], [9*], [:*], [; *], [< *], [= *], [> *], [?*], [@*], [A*], [B*], [C*], [D*], [E*], [F*], [G*], [H*], [I*], [J*], [K*], [L*], [M*], [N*], [O*], [P*], [Q*], [R*], [S*], [T*], [U*], [V*], [W*], [X*], [Y*], [Z*], [[*], [\ *], []*, [^ *], [_*], [’ *], [a*], [b*], [c*], [d*], [e*], [f*], [g*], [h*], [i*], [j*], [k*], [l*], [m*], [n*], [o*], [p*], [q*], [r*], [s*], [t*], [u*], [v*], [w*], [x*], [y*], [z*], [{*}, [| *], [}*], [~ *], [Preassociative *; *], [Postassociative *; *], [[*], [*], [priority * end], [newline *], [macro newline *], [MacroIndent(*)];

Preassociative

[* ’ *], [* ‘ *];

Preassociative

[*’];

Preassociative

[* · *], [* · 0 *];

Preassociative

[* + *], [* + 0 *], [* + 1 *], [* - *], [* - 0 *], [* - 1 *];

Preassociative

[* ∪ {*}], [* ∪ *], [* \ {*}];

Postassociative

[* . : *], [* . : *], [* : : *], [* + 2 * *], [* : : *], [* + 2 * *];

Postassociative

[* , *];

Preassociative

[* ^B ≈ *], [* ^D ≈ *], [* ^C ≈ *], [* ^P ≈ *], [* ≈ *], [* = *], [* → *], [* ^t = *], [* ^{t*} = *], [* ^r = *], [* ∈_T *], [* ⊆_T *], [* ^T = *], [* ^S = *], [* free in *], [* free in* *], [* free for * in *], [* free for* * in *], [* ∈_C *], [* < *], [* <’ *], [* ≤’ *], [* = *], [* ≠ *], [*^{var}], [*#⁰ *], [*#¹ *], [*#* *];

Preassociative

[¬*];

Preassociative

[* ∧ *], [* ^λ *], [* ^λ *], [* ∧_C *];

Preassociative

[* ∨ *], [* || *], [* [∨] *];

Preassociative

[∃* : *], [∀* : *], [∀_{obj}* : *];

Postassociative

[* [⇒] *], [* ⇒ *], [* ⇔ *];

Postassociative

[* : *], [* spy *], [*! *];

Preassociative

[* $\left\{ \begin{array}{c} * \\ * \end{array} \right.$ *];

Preassociative

[λ * .*], [Λ * .*], [Λ *], [if * then * else *], [let * = * in *], [let * \doteq * in *];

Preassociative

[*#*];

Preassociative

[*^I], [*[▷]], [*^V], [*⁺], [*⁻], [*^{*}];

Preassociative

[* @ *], [* ▷ *], [* ▷ *], [* ≫ *], [* ▷ *];

Postassociative

[* ⊢ *], [* ⊢ *], [* i.e. *];

Preassociative

[\forall *: *], [Π *: *];

Postassociative

[* ⊕ *];

Postassociative

[*; *];

Preassociative

[* proves *];

Preassociative

[* **proof of** * : *], [Line * : * ≫ *; *], [Last line * ≫ * □],

[Line * : Premise ≫ *; *], [Line * : Side-condition ≫ *; *], [Arbitrary ≫ *; *],

[Local ≫ * = *; *], [Begin *; * : End; *], [Last block line * ≫ *; *],

[Arbitrary ≫ *; *];

Postassociative

[* | *];

Postassociative

[* , *], [* [*]*];

Preassociative

[*&*], [→];

Preassociative

[**], [* linebreak[4] *], [**], [*||*];

[pogave $\xrightarrow{\text{pyk}}$ “pogave”]

rule div

[rule div $\xrightarrow{\text{pyk}}$ “rule div”]

S10

[S10 $\xrightarrow{\text{tex}}$ “
S10”]

[S10 $\xrightarrow{\text{pyk}}$ “axiom s ten”]

Prop 3.2i

[Prop 3.2i $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall a: \forall b: \forall c: \forall a: \forall b: \forall c: \text{Prop 3.2e} \gg \underline{a} = \underline{b} \Rightarrow \underline{a} + \underline{c} = \underline{b} + \underline{c}; \text{Prop 3.2h} \gg \underline{a} + \underline{c} = \underline{c} + \underline{a}; \text{Prop 3.2h} \gg \underline{b} + \underline{c} = \underline{c} + \underline{b}; \underline{a} = \underline{b} \vdash \text{MP} \triangleright \underline{a} = \underline{b} \Rightarrow \underline{a} + \underline{c} = \underline{b} + \underline{c} \triangleright \underline{a} = \underline{b} \gg \underline{a} + \underline{c} = \underline{b} + \underline{c}; \text{S1} \gg \underline{a} + \underline{c} = \underline{b} + \underline{c} \Rightarrow \underline{a} + \underline{c} = \underline{c} + \underline{a} \Rightarrow \underline{b} + \underline{c} = \underline{c} + \underline{a}; \text{MP} \triangleright \underline{a} + \underline{c} = \underline{b} + \underline{c} \Rightarrow \underline{a} + \underline{c} = \underline{c} + \underline{a} \Rightarrow \underline{b} + \underline{c} = \underline{c} + \underline{a} \triangleright \underline{a} + \underline{c} = \underline{b} + \underline{c} \gg \underline{a} + \underline{c} = \underline{c} + \underline{a} \Rightarrow \underline{b} + \underline{c} = \underline{c} + \underline{a}; \text{MP} \triangleright \underline{a} + \underline{c} = \underline{c} + \underline{a} \Rightarrow \underline{b} + \underline{c} = \underline{c} + \underline{a} \triangleright \underline{a} + \underline{c} = \underline{b} + \underline{c} \gg \underline{a} + \underline{c} = \underline{c} + \underline{a} \Rightarrow \underline{b} + \underline{c} = \underline{c} + \underline{a}; \text{Prop 3.2b} \triangleright \underline{b} + \underline{c} = \underline{c} + \underline{a} \gg \underline{c} + \underline{a} = \underline{b} + \underline{c}; \text{Prop 3.2e} \gg \underline{c} + \underline{a} = \underline{b} + \underline{c} \Rightarrow \underline{b} + \underline{c} = \underline{c} + \underline{b} \Rightarrow \underline{c} + \underline{a} = \underline{c} + \underline{b}; \text{MP} \triangleright \underline{c} + \underline{a} = \underline{b} + \underline{c} \Rightarrow \underline{b} + \underline{c} = \underline{c} + \underline{b} \Rightarrow \underline{c} + \underline{a} = \underline{c} + \underline{b} \triangleright \underline{c} + \underline{a} = \underline{c} + \underline{b} \gg \underline{b} + \underline{c} = \underline{c} + \underline{b} \Rightarrow \underline{c} + \underline{a} = \underline{c} + \underline{b}; \text{MP} \triangleright \underline{b} + \underline{c} = \underline{c} + \underline{b} \Rightarrow \underline{c} + \underline{a} = \underline{c} + \underline{b} \triangleright \underline{b} + \underline{c} = \underline{c} + \underline{b} \gg \underline{c} + \underline{a} = \underline{c} + \underline{b}; \text{Ded} \triangleright \forall a: \forall b: \forall c: \underline{a} = \underline{b} \vdash \underline{c} + \underline{a} = \underline{c} + \underline{b} \gg \underline{a} = \underline{b} \Rightarrow \underline{c} + \underline{a} = \underline{c} + \underline{b}], p_0, c)]$

[Prop 3.2i $\xrightarrow{\text{stmt}}$ $S \vdash \forall a: \forall b: \forall c: \underline{a} = \underline{b} \vdash \underline{c} + \underline{a} = \underline{c} + \underline{b}$]

[Prop 3.2i $\xrightarrow{\text{tex}}$ “
Prop\ 3.2i”]

[Prop 3.2i $\xrightarrow{\text{pyk}}$ “prop three two i”]

Prop 3.2j₁

[Prop 3.2j₁ $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall a: \forall b: \text{S5} \gg \underline{a} + \underline{b} + 0 = \underline{a} + \underline{b}; \text{S5} \gg \underline{b} + 0 = \underline{b}; \text{Prop 3.2i} \triangleright \underline{b} + 0 = \underline{b} \gg \underline{a} + \underline{b} + 0 = \underline{a} + \underline{b}; \text{Prop 3.2d} \triangleright \underline{a} + \underline{b} + 0 = \underline{a} + \underline{b} \triangleright \underline{a} + \underline{b} + 0 = \underline{a} + \underline{b} \gg \underline{a} + \underline{b} + 0 = \underline{a} + \underline{b} + 0], p_0, c)]$

[Prop 3.2j₁ $\xrightarrow{\text{stmt}}$ $S \vdash \forall a: \forall b: \underline{a} + \underline{b} + 0 = \underline{a} + \underline{b} + 0$]

[Prop 3.2j₁ $\xrightarrow{\text{tex}}$ “
Prop\ 3.2j-1”]

[Prop 3.2j₁ $\xrightarrow{\text{pyk}}$ “prop three two j one”]

Prop 3.2j₂

[Prop 3.2j₂ $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall a: \forall b: \forall c: \forall a: \forall b: \forall c: \underline{a} + \underline{b} + \underline{c} = \underline{a} + \underline{b} + \underline{c} \vdash S6 \gg \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}'; S2 \triangleright \underline{a} + \underline{b} + \underline{c} = \underline{a} + \underline{b} + \underline{c} \gg \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}'; \text{Prop } 3.2c \triangleright \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}' \triangleright \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}' \gg \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}'; S6 \gg \underline{b} + \underline{c}' = \underline{b} + \underline{c}'; \text{Prop } 3.2i \triangleright \underline{b} + \underline{c}' = \underline{b} + \underline{c}' \gg \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}'; S6 \gg \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}'; \text{Prop } 3.2c \triangleright \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}' \triangleright \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}' \gg \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}'; \text{Prop } 3.2d \triangleright \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}' \triangleright \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}' \gg \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}'; \text{Ded} \triangleright \forall a: \forall b: \forall c: \underline{a} + \underline{b} + \underline{c} = \underline{a} + \underline{b} + \underline{c} \vdash \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}' \gg \underline{a} + \underline{b} + \underline{c} = \underline{a} + \underline{b} + \underline{c} \Rightarrow \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}'], p_0, c)]$

[Prop 3.2j₂ $\xrightarrow{\text{stmt}}$ $S \vdash \forall a: \forall b: \forall c: \underline{a} + \underline{b} + \underline{c} = \underline{a} + \underline{b} + \underline{c} \Rightarrow \underline{a} + \underline{b} + \underline{c}' = \underline{a} + \underline{b} + \underline{c}'$]

[Prop 3.2j₂ $\xrightarrow{\text{tex}}$ “
Prop\ 3.2j-2”]

[Prop 3.2j₂ $\xrightarrow{\text{pyk}}$ “prop three two j two”]

Prop 3.2j

[Prop 3.2j $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall a: \forall b: \forall c: \text{Prop } 3.2j_1 \gg \bar{x} + \bar{y} + 0 = \bar{x} + \bar{y} + 0; \text{Prop } 3.2j_2 \gg \bar{x} + \bar{y} + \bar{z} = \bar{x} + \bar{y} + \bar{z} \Rightarrow \bar{x} + \bar{y} + \bar{z}' = \bar{x} + \bar{y} + \bar{z}'; S9 @ \bar{z} \triangleright \bar{x} + \bar{y} + 0 = \bar{x} + \bar{y} + 0 \triangleright \bar{x} + \bar{y} + \bar{z} = \bar{x} + \bar{y} + \bar{z} \Rightarrow \bar{x} + \bar{y} + \bar{z}' = \bar{x} + \bar{y} + \bar{z}' \gg \bar{x} + \bar{y} + \bar{z} = \bar{x} + \bar{y} + \bar{z}; \text{Ded} \triangleright \bar{x} + \bar{y} + \bar{z} = \bar{x} + \bar{y} + \bar{z} \gg \underline{a} + \underline{b} + \underline{c} = \underline{a} + \underline{b} + \underline{c}'], p_0, c)]$

[Prop 3.2j $\xrightarrow{\text{stmt}}$ $S \vdash \forall a: \forall b: \forall c: \underline{a} + \underline{b} + \underline{c} = \underline{a} + \underline{b} + \underline{c}$]

[Prop 3.2j $\xrightarrow{\text{tex}}$ “
Prop\ 3.2j”]

[Prop 3.2j $\xrightarrow{\text{pyk}}$ “prop three two j”]

Prop 3.2k₁

[Prop 3.2k₁ $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall a: \forall b: S7 \gg \underline{a} \cdot 0 = 0; S7 \gg \underline{b} \cdot 0 = 0; \text{Prop } 3.2a \gg 0 = 0; \text{Prop } 3.2b \triangleright \underline{b} \cdot 0 = 0 \gg 0 = \underline{b} \cdot 0; \text{Prop } 3.2c \gg \underline{a} \cdot 0 = 0 \Rightarrow 0 = \underline{b} \cdot 0 \Rightarrow \underline{a} \cdot 0 = \underline{b} \cdot 0; \underline{a} \cdot 0 = 0 \Rightarrow 0 = \underline{b} \cdot 0 \Rightarrow \underline{a} \cdot 0 = \underline{b} \cdot 0 \triangleright \underline{a} \cdot 0 = 0 \triangleright 0 = \underline{b} \cdot 0 \gg \underline{a} \cdot 0 = \underline{b} \cdot 0], p_0, c)]$

[Prop 3.2k₁ $\xrightarrow{\text{stmt}}$ $S \vdash \forall a: \forall b: \underline{a} = \underline{b} \vdash \underline{a} \cdot 0 = \underline{b} \cdot 0$]

[Prop 3.2k₁ $\xrightarrow{\text{tex}}$ “
Prop\ 3.2k.1”]

[Prop 3.2k₁ $\xrightarrow{\text{pyk}}$ “prop three two k one”]

Prop 3.2k₂

[Prop 3.2k₂ $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall a: \forall b: \forall c: \forall a: \forall b: \forall c: a = b \Rightarrow a \cdot c = b \cdot c \vdash a = b \vdash a = b \Rightarrow a \cdot c = b \cdot c \triangleright a = b \gg a \cdot c = b \cdot c; S8 \gg a \cdot c' = a \cdot c + a; S8 \gg b \cdot c' = b \cdot c + b; \text{Prop 3.2e} \gg a \cdot c = b \cdot c \Rightarrow a \cdot c + a = b \cdot c + a; a \cdot c = b \cdot c \Rightarrow a \cdot c + a = b \cdot c + a \triangleright a \cdot c = b \cdot c \gg a \cdot c + a = b \cdot c + a; \text{Prop 3.2i} \gg a = b \Rightarrow b \cdot c + a = b \cdot c + b; a = b \Rightarrow b \cdot c + a = b \cdot c + b \triangleright a \cdot c = b \cdot c \gg b \cdot c + a = b \cdot c + b; \text{Prop 3.2c} \gg a \cdot c + a = b \cdot c + a \Rightarrow b \cdot c + a = b \cdot c + b \Rightarrow a \cdot c + a = b \cdot c + b; a \cdot c + a = b \cdot c + a \Rightarrow b \cdot c + a = b \cdot c + b \Rightarrow a \cdot c + a = b \cdot c + b \triangleright a \cdot c + a = b \cdot c + a \triangleright b \cdot c + a = b \cdot c + b \gg a \cdot c + a = b \cdot c + b; a \cdot c + a = b \cdot c + b \triangleright a \cdot c' = a \cdot c + a \triangleright b \cdot c' = b \cdot c + b \gg a \cdot c' = b \cdot c'; \text{Ded} \triangleright \forall a: \forall b: \forall c: a = b \Rightarrow a \cdot c = b \cdot c \vdash a = b \vdash a \cdot c' = b \cdot c']$, p₀, c)]

[Prop 3.2k₂ $\xrightarrow{\text{stmt}}$ $S \vdash \forall a: \forall b: \forall c: a = b \Rightarrow a \cdot c = b \cdot c \vdash a = b \Rightarrow a \cdot c' = b \cdot c'$]

[Prop 3.2k₂ $\xrightarrow{\text{tex}}$ “
Prop \ 3.2k.2”]

[Prop 3.2k₂ $\xrightarrow{\text{pyk}}$ “prop three two k two”]

Prop 3.2k

[Prop 3.2k $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall a: \forall b: \forall c: \text{Prop 3.2k}_1 \gg \bar{x} = \bar{y} \Rightarrow \bar{x} \cdot 0 = \bar{y} \cdot 0; \text{Prop 3.2k}_2 \gg \bar{x} = \bar{y} \Rightarrow \bar{x} \cdot \bar{z} = \bar{y} \cdot \bar{z} \Rightarrow \bar{x} = \bar{y} \Rightarrow \bar{x} \cdot \bar{z}' = \bar{y} \cdot \bar{z}'; S9 @ \bar{z} \triangleright \bar{x} = \bar{y} \Rightarrow \bar{x} \cdot 0 = \bar{y} \cdot 0 \triangleright \bar{x} = \bar{y} \Rightarrow \bar{x} \cdot \bar{z} = \bar{y} \cdot \bar{z} \Rightarrow \bar{x} = \bar{y} \Rightarrow \bar{x} \cdot \bar{z}' = \bar{y} \cdot \bar{z}' \gg \bar{x} = \bar{y} \Rightarrow \bar{x} \cdot \bar{z} = \bar{y} \cdot \bar{z}; \text{Ded} \triangleright \bar{x} = \bar{y} \Rightarrow \bar{x} \cdot \bar{z} = \bar{y} \cdot \bar{z} \gg a = b \vdash a \cdot c = b \cdot c]$, p₀, c)]

[Prop 3.2k $\xrightarrow{\text{stmt}}$ $S \vdash \forall a: \forall b: \forall c: a = b \vdash a \cdot c = b \cdot c$]

[Prop 3.2k $\xrightarrow{\text{tex}}$ “
Prop \ 3.2k”]

[Prop 3.2k $\xrightarrow{\text{pyk}}$ “prop three two k”]

Prop 3.2l₁

[Prop 3.2l₁ $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash S7 \gg 0 \cdot 0 = 0]$, p₀, c)]

[Prop 3.2l₁ $\xrightarrow{\text{stmt}}$ $S \vdash \forall a: 0 \cdot 0 = 0$]

[Prop 3.2l₁ $\xrightarrow{\text{tex}}$ “
Prop \ 3.2l.1”]

[Prop 3.2l₁ $\xrightarrow{\text{pyk}}$ “prop three two l one”]

Prop 3.2l₂

[Prop 3.2l₂ $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall \underline{a}: \forall \underline{a}: 0 \cdot \underline{a} = 0 \vdash S8 \ggg 0 \cdot \underline{a}' = 0 \cdot \underline{a} + 0; S5 \ggg 0 \cdot \underline{a} + 0 = 0 \cdot \underline{a}; \text{Prop } 3.2c \triangleright 0 \cdot \underline{a} + 0 = 0 \cdot \underline{a} \triangleright 0 \cdot \underline{a}' = 0 \cdot \underline{a} + 0 \ggg 0 \cdot \underline{a}' = 0 \cdot \underline{a}; \text{Prop } 3.2c \triangleright 0 \cdot \underline{a}' = 0 \cdot \underline{a} \triangleright 0 \cdot \underline{a} = 0 \ggg 0 \cdot \underline{a}' = 0; \text{Ded} \triangleright \forall \underline{a}: 0 \cdot \underline{a} = 0 \vdash 0 \cdot \underline{a}' = 0 \ggg 0 \cdot \underline{a} = 0 \Rightarrow 0 \cdot \underline{a}' = 0], p_0, c)$]

[Prop 3.2l₂ $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: 0 \cdot \underline{a} = 0 \Rightarrow 0 \cdot \underline{a}' = 0$]

[Prop 3.2l₂ $\xrightarrow{\text{tex}}$ “
Prop\ 3.2l₂”]

[Prop 3.2l₂ $\xrightarrow{\text{pyk}}$ “prop three two l two”]

Prop 3.2l

[Prop 3.2l $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall \underline{a}: \text{Prop } 3.2l_1 \ggg 0 \cdot 0 = 0; \text{Prop } 3.2l_2 \ggg 0 \cdot \bar{x} = 0 \Rightarrow 0 \cdot \bar{x}' = 0; S9 @ \bar{x} \triangleright 0 \cdot 0 = 0 \triangleright 0 \cdot \bar{x} = 0 \Rightarrow 0 \cdot \bar{x}' = 0 \ggg 0 \cdot \bar{x} = 0; \text{Ded} \triangleright 0 \cdot \bar{x} = 0 \ggg 0 \cdot \underline{a} = 0], p_0, c)$]

[Prop 3.2l $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: 0 \cdot \underline{a} = 0$]

[Prop 3.2l $\xrightarrow{\text{tex}}$ “
Prop\ 3.2l”]

[Prop 3.2l $\xrightarrow{\text{pyk}}$ “prop three two l”]

Prop 3.2m₁

[Prop 3.2m₁ $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall \underline{a}: S7 \ggg \underline{a}' \cdot 0 = 0; \text{Prop } 3.2f \ggg 0 = 0 + 0; S7 \ggg 0 = \underline{a} \cdot 0; \text{Prop } 3.2e \ggg 0 = \underline{a} \cdot 0 \Rightarrow 0 + 0 = \underline{a} \cdot 0 + 0; 0 = \underline{a} \cdot 0 \Rightarrow 0 + 0 = \underline{a} \cdot 0 + 0 \triangleright 0 = \underline{a} \cdot 0 \ggg 0 + 0 = \underline{a} \cdot 0 + 0; \text{Prop } 3.2c \ggg 0 = 0 + 0 \Rightarrow 0 + 0 = \underline{a} \cdot 0 + 0 \Rightarrow 0 = \underline{a} \cdot 0 + 0; 0 = 0 + 0 \Rightarrow 0 + 0 = \underline{a} \cdot 0 + 0 \Rightarrow 0 = \underline{a} \cdot 0 + 0 \triangleright 0 = 0 + 0 \triangleright 0 + 0 = \underline{a} \cdot 0 + 0 \ggg 0 = \underline{a} \cdot 0 + 0; \text{Prop } 3.2c \ggg \underline{a}' \cdot 0 = 0 \Rightarrow 0 = \underline{a} \cdot 0 + 0 \Rightarrow \underline{a}' \cdot 0 = \underline{a} \cdot 0 + 0 \triangleright \underline{a}' \cdot 0 = 0 \triangleright \underline{a}' \cdot 0 = 0 \Rightarrow 0 = \underline{a} \cdot 0 + 0 \Rightarrow \underline{a}' \cdot 0 = \underline{a} \cdot 0 + 0 \ggg \underline{a}' \cdot 0 = \underline{a} \cdot 0 + 0], p_0, c)$]

[Prop 3.2m₁ $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \underline{a}' \cdot 0 = \underline{a} \cdot 0 + 0$]

[Prop 3.2m₁ $\xrightarrow{\text{tex}}$ “
Prop\ 3.2m₁”]

[Prop 3.2m₁ $\xrightarrow{\text{pyk}}$ “prop three two m one”]

Prop 3.2m₂

[Prop 3.2m₂ $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall \underline{a}: \forall \underline{b}: \forall \underline{a}': \forall \underline{b}': \underline{a}' \cdot \underline{b} = \underline{a} \cdot \underline{b} + \underline{b} \vdash S8 \gg \underline{a}' \cdot \underline{b}' = \underline{a}' \cdot \underline{b}' + \underline{a}'; \text{Prop 3.2e} \gg \underline{a}' \cdot \underline{b} = \underline{a} \cdot \underline{b} + \underline{b} \Rightarrow \underline{a}' \cdot \underline{b} + \underline{a}' = \underline{a} \cdot \underline{b} + \underline{b} + \underline{a}'; \underline{a}' \cdot \underline{b} = \underline{a} \cdot \underline{b} + \underline{b} \Rightarrow \underline{a}' \cdot \underline{b} + \underline{a}' = \underline{a} \cdot \underline{b} + \underline{b} + \underline{a}' \triangleright \underline{a}' \cdot \underline{b} = \underline{a} \cdot \underline{b} + \underline{b} \gg \underline{a}' \cdot \underline{b} + \underline{a}' = \underline{a} \cdot \underline{b} + \underline{b} + \underline{a}'; S6 \gg \underline{b} + \underline{a}' = \underline{b} + \underline{a}'; \text{Prop 3.2g} \gg \underline{b}' + \underline{a} = \underline{b} + \underline{a}'; \text{Prop 3.2d} \triangleright \underline{b} + \underline{a}' = \underline{b} + \underline{a}' \triangleright \underline{b}' + \underline{a} = \underline{b} + \underline{a}' \gg \underline{b} + \underline{a}' = \underline{b}' + \underline{a}; \text{Prop 3.2h} \gg \underline{b}' + \underline{a} = \underline{a} + \underline{b}'; \text{Prop 3.2c} \triangleright \underline{b} + \underline{a}' = \underline{b}' + \underline{a} \triangleright \underline{b}' + \underline{a} = \underline{a} + \underline{b}' \gg \underline{b} + \underline{a}' = \underline{a} + \underline{b}'; \text{Prop 3.2i} \triangleright \underline{b} + \underline{a}' = \underline{a} + \underline{b}' \gg \underline{a} \cdot \underline{b} + \underline{b} + \underline{a}' = \underline{a} \cdot \underline{b} + \underline{a} + \underline{b}'; S8 \gg \underline{a} \cdot \underline{b}' = \underline{a} \cdot \underline{b} + \underline{a}; \text{Prop 3.2e} \triangleright \underline{a} \cdot \underline{b}' = \underline{a} \cdot \underline{b} + \underline{a} \gg \underline{a} \cdot \underline{b}' + \underline{b}' = \underline{a} \cdot \underline{b} + \underline{a} + \underline{b}'; \text{Prop 3.2d} \triangleright \underline{a} \cdot \underline{b}' + \underline{b}' = \underline{a} \cdot \underline{b} + \underline{a} + \underline{b}' \triangleright \underline{a} \cdot \underline{b} + \underline{b} + \underline{a}' = \underline{a} \cdot \underline{b} + \underline{a} + \underline{b}' \gg \underline{a} \cdot \underline{b} + \underline{b} + \underline{a}' = \underline{a} \cdot \underline{b}' + \underline{b}'; \text{Prop 3.2c} \triangleright \underline{a}' \cdot \underline{b} + \underline{a}' = \underline{a} \cdot \underline{b} + \underline{b} + \underline{a}' \triangleright \underline{a} \cdot \underline{b} + \underline{b} + \underline{a}' = \underline{a} \cdot \underline{b}' + \underline{b}' \gg \underline{a}' \cdot \underline{b} + \underline{a}' = \underline{a} \cdot \underline{b}' + \underline{b}'; \text{Prop 3.2c} \triangleright \underline{a}' \cdot \underline{b}' = \underline{a}' \cdot \underline{b}' + \underline{a}' \triangleright \underline{a}' \cdot \underline{b} + \underline{a}' = \underline{a} \cdot \underline{b}' + \underline{b}' \gg \underline{a}' \cdot \underline{b}' = \underline{a} \cdot \underline{b}' + \underline{b}'; \text{Ded} \triangleright \forall \underline{a}: \forall \underline{b}: \underline{a}' \cdot \underline{b} = \underline{a} \cdot \underline{b} + \underline{b} \vdash \underline{a}' \cdot \underline{b}' = \underline{a} \cdot \underline{b}' + \underline{b}' \gg \underline{a}' \cdot \underline{b} = \underline{a} \cdot \underline{b} + \underline{b} \Rightarrow \underline{a}' \cdot \underline{b}' = \underline{a} \cdot \underline{b}' + \underline{b}'], p_0, c)]$

[Prop 3.2m₂ $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \underline{a}' \cdot \underline{b} = \underline{a} \cdot \underline{b} + \underline{b} \Rightarrow \underline{a}' \cdot \underline{b}' = \underline{a} \cdot \underline{b}' + \underline{b}']$

[Prop 3.2m₂ $\xrightarrow{\text{tex}}$ “
Prop \ 3.2m_2”]

[Prop 3.2m₂ $\xrightarrow{\text{pyk}}$ “prop three two m two”]

Prop 3.2m

[Prop 3.2m $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall \underline{a}: \forall \underline{b}: \text{Prop 3.2m}_1 \gg \bar{x}' \cdot 0 = \bar{x} \cdot 0 + 0; \text{Prop 3.2m}_2 \gg \bar{x}' \cdot \bar{y} = \bar{x} \cdot \bar{y} + \bar{y} \Rightarrow \bar{x}' \cdot \bar{y}' = \bar{x} \cdot \bar{y}' + \bar{y}; S9 @ \bar{y} \triangleright \bar{x}' \cdot 0 = \bar{x} \cdot 0 + 0 \triangleright \bar{x}' \cdot \bar{y} = \bar{x} \cdot \bar{y} + \bar{y} \Rightarrow \bar{x}' \cdot \bar{y}' = \bar{x} \cdot \bar{y}' + \bar{y} \gg \bar{x}' \cdot \bar{y} = \bar{x} \cdot \bar{y} + \bar{y}; \text{Ded} \triangleright \bar{x}' \cdot \bar{y} = \bar{x} \cdot \bar{y} + \bar{y} \gg \underline{a}' \cdot \underline{b} = \underline{a} \cdot \underline{b} + \underline{b}], p_0, c)]$

[Prop 3.2m $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \underline{a}' \cdot \underline{b} = \underline{a} \cdot \underline{b} + \underline{b}']$

[Prop 3.2m $\xrightarrow{\text{tex}}$ “
Prop \ 3.2m”]

[Prop 3.2m $\xrightarrow{\text{pyk}}$ “prop three two m”]

Prop 3.2n₁

[Prop 3.2n₁ $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall \underline{a}: S7 \gg \underline{a} \cdot 0 = 0; \text{Prop 3.2l} \gg 0 \cdot \underline{a} = 0; \text{Prop 3.2c} \triangleright \underline{a} \cdot 0 = 0 \triangleright 0 \cdot \underline{a} = 0 \gg \underline{a} \cdot 0 = 0 \cdot \underline{a}], p_0, c)]$

[Prop 3.2n₁ $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \underline{a} \cdot 0 = 0 \cdot \underline{a}']$

[Prop 3.2n₁ $\xrightarrow{\text{tex}}$ “
Prop \ 3.2n_1”]

[Prop 3.2n₁ $\xrightarrow{\text{pyk}}$ “prop three two n one”]

Prop 3.2n₂

[Prop 3.2n₂ $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall a: \forall b: \forall a: \forall b: \underline{a} \cdot \underline{b} = \underline{b} \cdot \underline{a} \vdash S8 \gg \underline{a} \cdot \underline{b}' = \underline{a} \cdot \underline{b} + \underline{a}; \text{Prop 3.2e} \triangleright \underline{a} \cdot \underline{b} = \underline{b} \cdot \underline{a} \gg \underline{a} \cdot \underline{b} + \underline{a} = \underline{b} \cdot \underline{a} + \underline{a}; \text{Prop 3.2b} \triangleright \text{Prop 3.2m} \gg \underline{b} \cdot \underline{a} + \underline{a} = \underline{b}' \cdot \underline{a}; \text{Prop 3.2c} \triangleright L_e \triangleright \underline{b} \cdot \underline{a} + \underline{a} = \underline{b}' \cdot \underline{a} \gg \underline{a} \cdot \underline{b} + \underline{a} = \underline{b}' \cdot \underline{a}; \text{Prop 3.2c} \triangleright \underline{a} \cdot \underline{b}' = \underline{a} \cdot \underline{b} + \underline{a} \triangleright \underline{a} \cdot \underline{b} + \underline{a} = \underline{b}' \cdot \underline{a} \gg \underline{a} \cdot \underline{b}' = \underline{b}' \cdot \underline{a}; \text{Ded} \triangleright \forall a: \forall b: \underline{a} \cdot \underline{b} = \underline{b} \cdot \underline{a} \vdash \underline{a} \cdot \underline{b}' = \underline{b}' \cdot \underline{a} \gg \underline{a} \cdot \underline{b} = \underline{b} \cdot \underline{a} \Rightarrow \underline{a} \cdot \underline{b}' = \underline{b}' \cdot \underline{a}], p_0, c)]$

[Prop 3.2n₂ $\xrightarrow{\text{stmt}}$ $S \vdash \forall a: \forall b: \underline{a} \cdot \underline{b} = \underline{b} \cdot \underline{a} \Rightarrow \underline{a} \cdot \underline{b}' = \underline{b}' \cdot \underline{a}]$

[Prop 3.2n₂ $\xrightarrow{\text{tex}}$ “
Prop\ 3.2n.2”]

[Prop 3.2n₂ $\xrightarrow{\text{pyk}}$ “prop three two n two”]

Prop 3.2n

[Prop 3.2n $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall a: \forall b: \text{Prop 3.2n}_1 \gg \bar{x} \cdot 0 = 0 \cdot \bar{x}; \text{Prop 3.2n}_2 \gg \bar{x} \cdot \bar{y} + \bar{y} \cdot \bar{x} \Rightarrow \bar{x} \cdot \bar{y}' = \bar{y}' \cdot \bar{x}; S9 @ \bar{y} \triangleright \bar{x} \cdot 0 = 0 \cdot \bar{x} \triangleright \bar{x} \cdot \bar{y} = \bar{y} \cdot \bar{x} \Rightarrow \bar{x} \cdot \bar{y}' = \bar{y}' \cdot \bar{x} \gg \bar{x} \cdot \bar{y} = \bar{y} \cdot \bar{x}; \text{Ded} \triangleright \bar{x} \cdot \bar{y} = \bar{y} \cdot \bar{x} \gg \underline{a} \cdot \underline{b} = \underline{b} \cdot \underline{a}], p_0, c)]$

[Prop 3.2n $\xrightarrow{\text{stmt}}$ $S \vdash \forall a: \forall b: \underline{a} \cdot \underline{b} = \underline{b} \cdot \underline{a}]$

[Prop 3.2n $\xrightarrow{\text{tex}}$ “
Prop\ 3.2n”]

[Prop 3.2n $\xrightarrow{\text{pyk}}$ “prop three two n”]

Prop 3.2o

[Prop 3.2o $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}([S \vdash \forall a: \forall b: \forall c: \forall a: \forall b: \forall c: \underline{a} = \underline{b} \vdash \text{Prop 3.2k} \gg \underline{a} = \underline{b} \Rightarrow \underline{a} \cdot \underline{c} = \underline{b} \cdot \underline{c}; \underline{a} = \underline{b} \Rightarrow \underline{a} \cdot \underline{c} = \underline{b} \cdot \underline{c} \triangleright \underline{a} = \underline{b} \gg \underline{a} \cdot \underline{c} = \underline{b} \cdot \underline{c}; \text{Prop 3.2n} \gg \underline{a} \cdot \underline{c} = \underline{c} \cdot \underline{a}; \text{Prop 3.2n} \gg \underline{b} \cdot \underline{c} = \underline{c} \cdot \underline{b}; \text{Prop 3.2c} \gg \underline{a} \cdot \underline{c} = \underline{b} \cdot \underline{c} \Rightarrow \underline{b} \cdot \underline{c} = \underline{c} \cdot \underline{b} \Rightarrow \underline{a} \cdot \underline{c} = \underline{c} \cdot \underline{b}; \underline{a} \cdot \underline{c} = \underline{b} \cdot \underline{c} \Rightarrow \underline{b} \cdot \underline{c} = \underline{c} \cdot \underline{b} \Rightarrow \underline{a} \cdot \underline{c} = \underline{c} \cdot \underline{b} \triangleright \underline{a} \cdot \underline{c} = \underline{b} \cdot \underline{c} \triangleright \underline{b} \cdot \underline{c} = \underline{c} \cdot \underline{b} \gg \underline{a} \cdot \underline{c} = \underline{c} \cdot \underline{b}; S1 \gg \underline{a} \cdot \underline{c} = \underline{c} \cdot \underline{b} \Rightarrow \underline{a} \cdot \underline{c} = \underline{c} \cdot \underline{a} \Rightarrow \underline{c} \cdot \underline{a} = \underline{c} \cdot \underline{b}; \underline{a} \cdot \underline{c} = \underline{c} \cdot \underline{b} \Rightarrow \underline{a} \cdot \underline{c} = \underline{c} \cdot \underline{a} \Rightarrow \underline{c} \cdot \underline{a} = \underline{c} \cdot \underline{b} \triangleright \underline{a} \cdot \underline{c} = \underline{c} \cdot \underline{b} \triangleright \underline{a} \cdot \underline{c} = \underline{c} \cdot \underline{a} \gg \underline{c} \cdot \underline{a} = \underline{c} \cdot \underline{b}; \text{Ded} \triangleright \forall a: \forall b: \forall c: \underline{a} = \underline{b} \vdash \underline{c} \cdot \underline{a} = \underline{c} \cdot \underline{b} \gg \underline{a} = \underline{b} \Rightarrow \underline{c} \cdot \underline{a} = \underline{c} \cdot \underline{b}], p_0, c)]$

[Prop 3.2o $\xrightarrow{\text{stmt}}$ $S \vdash \forall a: \forall b: \forall c: \underline{a} = \underline{b} \vdash \underline{c} \cdot \underline{a} = \underline{c} \cdot \underline{b}]$

[Prop 3.2o $\xrightarrow{\text{tex}}$ “
Prop\ 3.2o”]

[Prop 3.2o $\xrightarrow{\text{pyk}}$ “prop three two o”]

Prop 3.4a₁

[Prop 3.4a₁ $\xrightarrow{\text{tex}}$ “
Prop\ 3.4a.1”]

[Prop 3.4a₁ $\xrightarrow{\text{pyk}}$ “prop three four a one”]

Prop 3.4a₂

[Prop 3.4a₂ $\xrightarrow{\text{tex}}$ “
Prop\ 3.4a.2”]

[Prop 3.4a₂ $\xrightarrow{\text{pyk}}$ “prop three four a two”]

Prop 3.4a

[Prop 3.4a $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \forall \underline{c}: \underline{a} \cdot \underline{b} + \underline{c} = \underline{a} \cdot \underline{b} + \underline{a} \cdot \underline{c}$]

[Prop 3.4a $\xrightarrow{\text{tex}}$ “
Prop\ 3.4a”]

[Prop 3.4a $\xrightarrow{\text{pyk}}$ “prop three four a”]

Prop 3.4b

[Prop 3.4b $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \forall \underline{c}: \underline{b} + \underline{c} \cdot \underline{a} = \underline{b} \cdot \underline{a} + \underline{c} \cdot \underline{b}$]

[Prop 3.4b $\xrightarrow{\text{tex}}$ “
Prop\ 3.4b”]

[Prop 3.4b $\xrightarrow{\text{pyk}}$ “prop three four b”]

Prop 3.4c₁

[Prop 3.4c₁ $\xrightarrow{\text{tex}}$ “
Prop\ 3.4c.1”]

[Prop 3.4c₁ $\xrightarrow{\text{pyk}}$ “prop three four c one”]

Prop 3.4c₂

[Prop 3.4c₂ $\xrightarrow{\text{tex}}$ “
Prop\ 3.4c.2”]

[Prop 3.4c₂ $\xrightarrow{\text{pyk}}$ “prop three four c two”]

Prop 3.4c

[Prop 3.4c $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \forall \underline{c}: \underline{a} \cdot \underline{b} \cdot \underline{c} = \underline{a} \cdot \underline{b} \cdot \underline{c}$]

[Prop 3.4c $\xrightarrow{\text{tex}}$ “
Prop\ 3.4c”]

[Prop 3.4c $\xrightarrow{\text{pyk}}$ “prop three four c”]

Prop 3.4d₁

[Prop 3.4d₁ $\xrightarrow{\text{tex}}$ “
Prop\ 3.4d.1”]

[Prop 3.4d₁ $\xrightarrow{\text{pyk}}$ “prop three four d one”]

Prop 3.4d₂

[Prop 3.4d₂ $\xrightarrow{\text{tex}}$ “
Prop\ 3.4d.2”]

[Prop 3.4d₂ $\xrightarrow{\text{pyk}}$ “prop three four d two”]

Prop 3.4d

[Prop 3.4d $\xrightarrow{\text{stmt}}$ $S \vdash \forall \underline{a}: \forall \underline{b}: \forall \underline{c}: \underline{a} + \underline{c} = \underline{b} + \underline{c} \Rightarrow \underline{a} = \underline{b}$]

[Prop 3.4d $\xrightarrow{\text{tex}}$ “
Prop\ 3.4d”]

[Prop 3.4d $\xrightarrow{\text{pyk}}$ “prop three four d”]

||

[x||y $\xrightarrow{\text{tex}}$ "#1.
\| #2."]

[*||* $\xrightarrow{\text{pyk}}$ "n divides "]

The pyk compiler, version 0.grue.20060417+ by Klaus Grue

GRD-2006-06-21.UTC:11:42:14.848103 = MJD-53907.TAI:11:42:47.848103 =

LGT-4657606967848103e-6