

Logiweb codex of HMpeano

Up Help

S' , $A1'$, $A2'$, $A3'$, $A4'$, $A5'$, $S1'$, $S2'$, $S3'$, $S4'$, $S5'$, $S6'$, $S7'$, $S8'$, $S9'$, MP' , Gen' , MP'_h , Hypothesize, $* \supseteq *$, $* \supseteq_h *$, HMpeano, *Mendelson 3.2(a)*, *Mendelson 3.2(b)*, *Mendelson 3.2(b)^R*, *Mendelson 3.2(c)*, *Mendelson 3.2(c)^R*, *Mendelson 3.2(c)^R_h*, *Mendelson 3.2(d)*, *Mendelson 3.2(d)^R*, *Mendelson 3.2(d)^R_h*, *Mendelson 3.2(f)*, *Mendelson 3.2(f)₀*, *Mendelson 3.2(f)_n*, *Mendelson 3.2(f)(i)*, *Mendelson 3.2(g)*, *Mendelson 3.2(g)₀*, *Mendelson 3.2(g)_n*, *Mendelson 3.2(g)_h(r, t)*, *Mendelson 3.2(h)*, *Mendelson 3.2(h)₀*, *Mendelson 3.2(h)_n*, $S6'_h$, *Lemma 1*, *Lemma 2*,

S'

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

$A1'$

$[A1' \xrightarrow{\text{proof}} \text{Rule tactic}]$

$[A1' \xrightarrow{\text{stmt}} S' \vdash \forall \underline{a}: \forall \underline{b}: [\underline{a} \Rightarrow [\underline{b} \Rightarrow \underline{a}]]]$

$A2'$

$[A2' \xrightarrow{\text{proof}} \text{Rule tactic}]$

$[A2' \xrightarrow{\text{stmt}} S' \vdash \forall \underline{a}: \forall \underline{b}: \forall \underline{c}: [[\underline{a} \Rightarrow [\underline{b} \Rightarrow \underline{c}]] \Rightarrow [[\underline{a} \Rightarrow \underline{b}] \Rightarrow [\underline{a} \Rightarrow \underline{c}]]]]$

$A3'$

$[A3' \xrightarrow{\text{proof}} \text{Rule tactic}]$

$[A3' \xrightarrow{\text{stmt}} S' \vdash \forall \underline{a}: \forall \underline{b}: [[[\neg \underline{b}] \Rightarrow \neg \underline{a}] \Rightarrow [[[\neg \underline{b}] \Rightarrow \underline{a}] \Rightarrow \underline{b}]]]$

A4'

[A4' $\xrightarrow{\text{proof}}$ Rule tactic]

[A4' $\xrightarrow{\text{stmt}}$ $S' \vdash \forall \underline{c}: \forall \underline{a}: \forall \underline{x}: \forall \underline{b}: [[\underline{a}] \equiv \langle [\underline{b}] | [\underline{x}] \rangle := [\underline{c}]] \Vdash [[\dot{\forall} \underline{x}: \underline{b}] \Rightarrow \underline{a}]]]$

A5'

[A5' $\xrightarrow{\text{proof}}$ Rule tactic]

[A5' $\xrightarrow{\text{stmt}}$ $S' \vdash \forall \underline{x}: \forall \underline{a}: \forall \underline{b}: [\text{nonfree}([\underline{x}], [\underline{a}]) \Vdash [[\dot{\forall} \underline{x}: [\underline{a} \Rightarrow \underline{b}]] \Rightarrow [\underline{a} \Rightarrow \dot{\forall} \underline{x}: \underline{b}]]]]$

S1'

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

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

S2'

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

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

S3'

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

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

S4'

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

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

S5'

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

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

S6'

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

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

S7'

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

[S7' $\xrightarrow{\text{stmt}}$ $S' \vdash \forall \underline{a}: [[\underline{a} \dot{:} \dot{0}] \stackrel{p}{=} \dot{0}]]$

S8'

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

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

S9'

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

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

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' $\xrightarrow{\text{stmt}}$ $S' \vdash \forall \underline{x}: \forall \underline{a}: [\underline{a} \vdash \check{\forall} \underline{x}: \underline{a}]]$

MP'_h

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

Hypothesize

$[Hypothesize \xrightarrow{\text{stmt}} S' \vdash \forall \underline{h}: \forall \underline{a}: [\underline{a} \vdash [\underline{h} \Rightarrow \underline{a}]]]$

$* \underline{\triangleright} *$

$[x \triangleright y \xrightarrow{\text{macro}} \lambda t. \lambda s. \lambda c. \tilde{\mathcal{M}}_4(t, s, c, [[x \triangleright y \doteq [MP' \triangleright x] \triangleright y]])]$

$* \underline{\triangleright}_h *$

$[x \triangleright_h y \xrightarrow{\text{macro}} \lambda t. \lambda s. \lambda c. \tilde{\mathcal{M}}_4(t, s, c, [[x \triangleright_h y \doteq [MP'_h \triangleright x] \triangleright y]])]$

HMpeano

$[HMpeano \xrightarrow{\text{tex}} \text{"HMpeano"}]$

$[HMpeano \xrightarrow{\text{pyk}} \text{"hmpeano"}]$

Mendelson 3.2(a)

$[Mendelson\ 3.2(a) \xrightarrow{\text{proof}} \lambda c. \lambda x. \mathcal{P}([S' \vdash \forall \underline{t}: [[S5' \gg [[\underline{t} \dot{+} \dot{0}] \stackrel{P}{=} \underline{t}]]]; [[S1' \gg [[[[\underline{t} \dot{+} \dot{0}] \stackrel{P}{=} \underline{t}] \Rightarrow [[[\underline{t} \dot{+} \dot{0}] \stackrel{P}{=} \underline{t}] \Rightarrow [\underline{t} \stackrel{P}{=} \underline{t}]]]]; [[[[MP' \triangleright [[[\underline{t} \dot{+} \dot{0}] \stackrel{P}{=} \underline{t}] \Rightarrow [[[\underline{t} \dot{+} \dot{0}] \stackrel{P}{=} \underline{t}] \Rightarrow [\underline{t} \stackrel{P}{=} \underline{t}]]]] \triangleright [[\underline{t} \dot{+} \dot{0}] \stackrel{P}{=} \underline{t}]] \gg [[[\underline{t} \dot{+} \dot{0}] \stackrel{P}{=} \underline{t}] \Rightarrow [\underline{t} \stackrel{P}{=} \underline{t}]]]; [[[MP' \triangleright [[[\underline{t} \dot{+} \dot{0}] \stackrel{P}{=} \underline{t}] \Rightarrow [\underline{t} \stackrel{P}{=} \underline{t}]]]] \triangleright [[\underline{t} \dot{+} \dot{0}] \stackrel{P}{=} \underline{t}]] \gg [[\underline{t} \stackrel{P}{=} \underline{t}]]]]], p_0, c)]$

$[Mendelson\ 3.2(a) \xrightarrow{\text{stmt}} S' \vdash \forall \underline{t}: [\underline{t} \stackrel{P}{=} \underline{t}]]$

$[Mendelson\ 3.2(a) \xrightarrow{\text{tex}} \text{"\mathit{Mendelson \; 3.2(a)}"}]$

$[Mendelson\ 3.2(a) \xrightarrow{\text{pyk}} \text{"prop three two a"}]$

Mendelson 3.2(b)

[Mendelson 3.2(b) $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}(\lceil S' \vdash \forall \underline{t}. \forall r: [[S1' \gg [[\underline{t} \stackrel{P}{=} r] \Rightarrow [[\underline{t} \stackrel{P}{=} \underline{t}]] \Rightarrow [\underline{r} \stackrel{P}{=} \underline{t}]]]]$; [[[Lemma 1 $\triangleright [[\underline{t} \stackrel{P}{=} r] \Rightarrow [[\underline{t} \stackrel{P}{=} \underline{t}] \Rightarrow [\underline{r} \stackrel{P}{=} \underline{t}]]]] \gg [[\underline{t} \stackrel{P}{=} \underline{t}] \Rightarrow [[\underline{t} \stackrel{P}{=} r] \Rightarrow [\underline{r} \stackrel{P}{=} \underline{t}]]]$; [[Mendelson 3.2(a) $\gg [\underline{t} \stackrel{P}{=} \underline{t}]]$; [[[MP' $\triangleright [[\underline{t} \stackrel{P}{=} \underline{t}] \Rightarrow [[\underline{t} \stackrel{P}{=} r] \Rightarrow [\underline{r} \stackrel{P}{=} \underline{t}]]]] \triangleright [\underline{t} \stackrel{P}{=} \underline{t}]] \gg [[\underline{t} \stackrel{P}{=} r] \Rightarrow [\underline{r} \stackrel{P}{=} \underline{t}]]]]]$, p0, c)]

[Mendelson 3.2(b) $\xrightarrow{\text{stmt}}$ $S' \vdash \forall \underline{t}. \forall r: [[\underline{t} \stackrel{P}{=} r] \Rightarrow [\underline{r} \stackrel{P}{=} \underline{t}]]]$

[Mendelson 3.2(b) $\xrightarrow{\text{tex}}$ “\mathit{Mendelson \; 3.2(b)}”]

[Mendelson 3.2(b) $\xrightarrow{\text{pyk}}$ “prop three two b”]

Mendelson 3.2(b)^R

[Mendelson 3.2(b)^R $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}(\lceil S' \vdash \forall \underline{t}. \forall r: [[\underline{t} \stackrel{P}{=} r] \vdash [[Mendelson 3.2(b) \gg [[\underline{t} \stackrel{P}{=} r] \Rightarrow [\underline{r} \stackrel{P}{=} \underline{t}]]]$; [[[MP' $\triangleright [[\underline{t} \stackrel{P}{=} r] \Rightarrow [\underline{r} \stackrel{P}{=} \underline{t}]]] \triangleright [\underline{t} \stackrel{P}{=} r]] \gg [\underline{r} \stackrel{P}{=} \underline{t}]]]]$, p0, c)]

[Mendelson 3.2(b)^R $\xrightarrow{\text{stmt}}$ $S' \vdash \forall \underline{t}. \forall r: [[\underline{t} \stackrel{P}{=} r] \vdash [\underline{r} \stackrel{P}{=} \underline{t}]]]$

[Mendelson 3.2(b)^R $\xrightarrow{\text{tex}}$ “\mathit{Mendelson \; 3.2(b)^R}”]

[Mendelson 3.2(b)^R $\xrightarrow{\text{pyk}}$ “prop three two b rule”]

Mendelson 3.2(c)

[Mendelson 3.2(c) $\xrightarrow{\text{proof}}$ $\lambda c. \lambda x. \mathcal{P}(\lceil S' \vdash \forall \underline{t}. \forall r. \forall \underline{s}: [[S1' \gg [[\underline{r} \stackrel{P}{=} \underline{t}] \Rightarrow [[\underline{r} \stackrel{P}{=} \underline{s}] \Rightarrow [\underline{t} \stackrel{P}{=} \underline{s}]]]]$; [[Mendelson 3.2(b) $\gg [[\underline{t} \stackrel{P}{=} r] \Rightarrow [\underline{r} \stackrel{P}{=} \underline{t}]]]$; [[[Lemma 2 $\triangleright [[\underline{t} \stackrel{P}{=} r] \Rightarrow [\underline{r} \stackrel{P}{=} \underline{t}]]] \triangleright [[\underline{r} \stackrel{P}{=} \underline{t}] \Rightarrow [[\underline{r} \stackrel{P}{=} \underline{s}] \Rightarrow [\underline{t} \stackrel{P}{=} \underline{s}]]]] \gg [[\underline{t} \stackrel{P}{=} r] \Rightarrow [[\underline{r} \stackrel{P}{=} \underline{s}] \Rightarrow [\underline{t} \stackrel{P}{=} \underline{s}]]]]]$, p0, c)]

[Mendelson 3.2(c) $\xrightarrow{\text{stmt}}$ $S' \vdash \forall \underline{t}. \forall r. \forall \underline{s}: [[\underline{t} \stackrel{P}{=} r] \Rightarrow [[\underline{r} \stackrel{P}{=} \underline{s}] \Rightarrow [\underline{t} \stackrel{P}{=} \underline{s}]]]]$

[Mendelson 3.2(c) $\xrightarrow{\text{tex}}$ “\mathit{Mendelson \; 3.2(c)}”]

[Mendelson 3.2(c) $\xrightarrow{\text{pyk}}$ “prop three two c”]

