

EVENT: Start with the library "arith".

; Here again is the definition of RAMSEY.

DEFINITION:

$\text{ramsey}(p, q)$

= **if** $p \simeq 0$ **then** 1

elseif $q \simeq 0$ **then** 1

else $\text{ramsey}(p - 1, q) + \text{ramsey}(p, q - 1)$ **endif**

DEFINITION:

$\text{fact}(n)$

= **if** $n \simeq 0$ **then** 1

else $n * \text{fact}(n - 1)$ **endif**

DEFINITION:

$\text{choose}(m, n) = (\text{fact}(m) \div (\text{fact}(n) * \text{fact}(m - n)))$

THEOREM: fact-not-zerop

$\text{fact}(x) \neq 0$

THEOREM: ramsey-choose-1

$((\text{fact}(p) * \text{fact}(q)) * \text{ramsey}(p, q)) = \text{fact}(p + q)$

THEOREM: ramsey-choose

$\text{ramsey}(p, q) = \text{choose}(p + q, p)$

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