3.1.1

we have $f(n)$ & $g(n)$, asymptotically non-negative f^n.

we have to prove

$$\max(f(n), g(n)) = \theta(f(n) + g(n))$$

let us take $f(n) = a_1 x^n + a_2 x^{n-1} + \cdots a_n$

$$g(n) = a_1 x^m + a_2 x_2^{m-1} \cdots a_n$$

Now to find $\max(f(n), g(n))$

Let's add $f(n) + g(n)$

$$= a_1(x^m + x^n) + a_2(x^{m-1} + x^{n-1}) + \cdots$$

Now the greater among them will be given by

$$\theta(f(n) + g(n)) = \sum_{\substack{\min \\ a_i > 0}}^{1} a_i x^{\max 1}$$

Hence $\max(f(n)\ g(n) = \theta(f(n) + g(n))$