a) $n \log(n) < n \log(n) \log(log(n)) < n \, (\log(n))^{\frac{3}{2}} < n^{\frac{4}{3}} \, (\log(n))^2 < n^{\frac{3}{2}} < 2^{100n} < n^n < 2^{n^2}$

b) True. There exists two constants c1, c2 > 0 and n0 such that c1*g(n) <= f(n) <= c2g(n) for all n >=n0, which is f(n) = theta(g(n))