

## Exercise 1.5.4

Kevin Martin  
CIS675 - Syracuse University

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The asymptotic relationship between  $f(x)=x^2$  and  $g(x)=2^x$  is as follows:  
 $L = \lim f/g = x^2/2^x$   
'= $\lim 2^x/\ln 2 * 2^x$   
'= $\lim 2/(\ln 2)^2 * 2^x$   
'= $0$   
Because  $L = 0$ ,  $f(x) = o(g(x))$  and  $f(x) = O(g(x))$