

1. Consider the functions f and g defined on N by $f(n) = \begin{cases} n^2 & \text{for } n \text{ even} \\ 2n & \text{for } n \text{ odd} \end{cases}$ and $g(n) = n^2$. Show that $f = O(g)$ but that $f \neq o(g)$ and $g \neq o(f)$.