Problem 4

a)

We need to show that for all constants c > 0, there exists a constants $n_0 > 0$ such that $15 + 7n \leq c * n \log n$ for all $n \geq n_0$

Let $c > 0$ be given,

$$\begin{aligned} 15 + 7n \leq 15n &\leq \frac{15}{\log n} n \log n \quad \forall n \geq 2 \\ &\leq c * n \log n \end{aligned}$$

Thus, $c \geq \frac{15}{\log n}$

For any c, we choose $n_0 = 2^{\frac{15}{c}}$