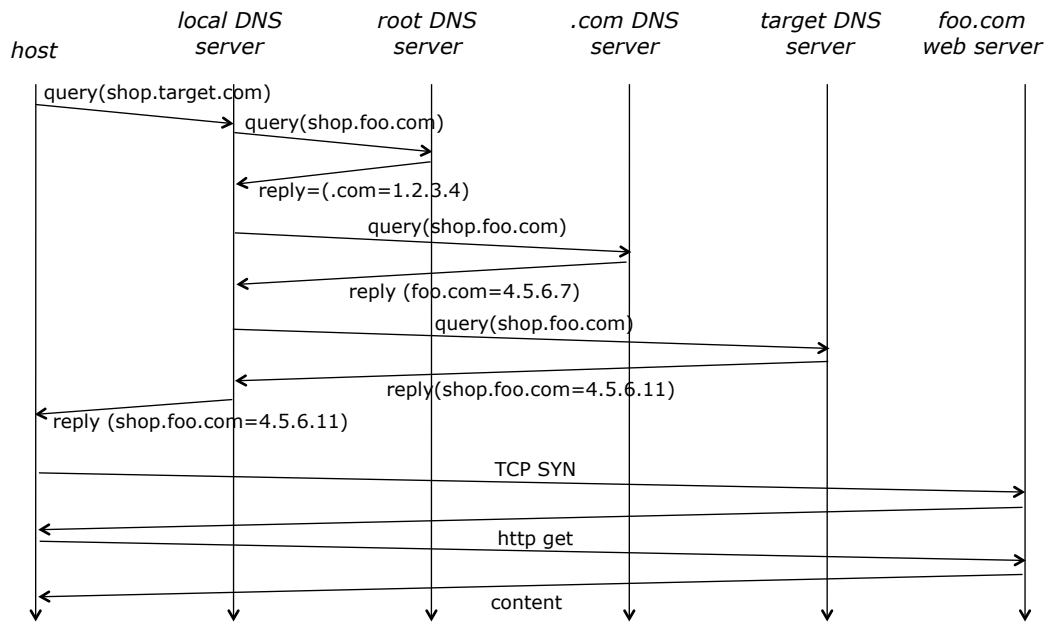1. (5 points). The diagram below shows a typical DNS scenario that might occur when a host accesses a remote web page.


Assuming that all caches are empty initially, show the entries that would be added to the local DNS server's cache by the end of this scenario.

Show the entries that would be added to the host's cache.

Suppose the user now clicks on a link to another page on the same server. How many DNS servers must be queried in order to handle this request? Assume non-persistent HTTP.

2. (5 points) The diagram at right shows two TCP senders at left and the corresponding receivers at right. Both senders use TCP *Tahoe* and are sending large files. Assume that the MSS is 1 KB, that the one-way propagation delay for both connections is 50 ms and that the link joining the two routers has a bandwidth of 8 Mb/s. Let $cwnd_1$ and $cwnd_2$ be the values of the senders' congestion windows.
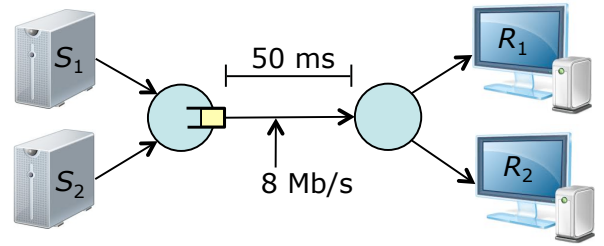
What is the smallest value of $cwnd_1+cwnd_2$ for which the link joining the two routers could stay busy all the time?

Assume that the link buffer overflows whenever $cwnd_1+cwnd_2 \geq 150$ KB and that at time 0, $cwnd_1$=120 KB and $cwnd_2$=30 KB. Approximately, what are the values of $cwnd_1$ and $cwnd_2$ one RTT later?

Approximately how many more RTTs pass before the first sender leaves the slow-start state?