Exercise 1:

1. IP addresses of www.koala.com.au:

104.18.60.21

104.18.61.21

There are multiple IP addresses so that the load on the website is spread across multiple IP addresses

2. IP address 127.0.0.1 is called localhost. This IP address is special because it is always the localhost

Exercise 2:

Hosts not reachable by ping:

www.hola.hp - unknown host - website doesn't exist

http://www.kremlin.ru/ unknown host - kremlin.ru does not allow people to ping their server for security reasons

Exercise 3:

1. There are 23 routers between our machine and http://www.columbia.edu/

5 routers part of the unsw network

2 routers that route across the pacific ocean (found using whois):

- router 9: 113.197.15.201 in Australia

- router 10: 207.231.240.8 - in Los Angeles

2. After router 2 (129.94.39.17), the paths from our machine to the 3 destinations diverge. This router is the UNSW Hostmaster.

The number of hops is not proportional since tokyo and UCLA take 30 hops and closer to unsw than lancaster which only takes 18 hops

3. (i) = 202.150.221.169

(ii) = 203.50.77.53

The reverse path doesn't go through the same routers as the forward path.

No the common routers dont necessarily have the same IP address. This is because routers have multiple IP addresses to spread the load of traffic

Exercise 4:

1.

1. 130.102.131.123 - www.uq.edu.au - 731km (approximately) from unsw

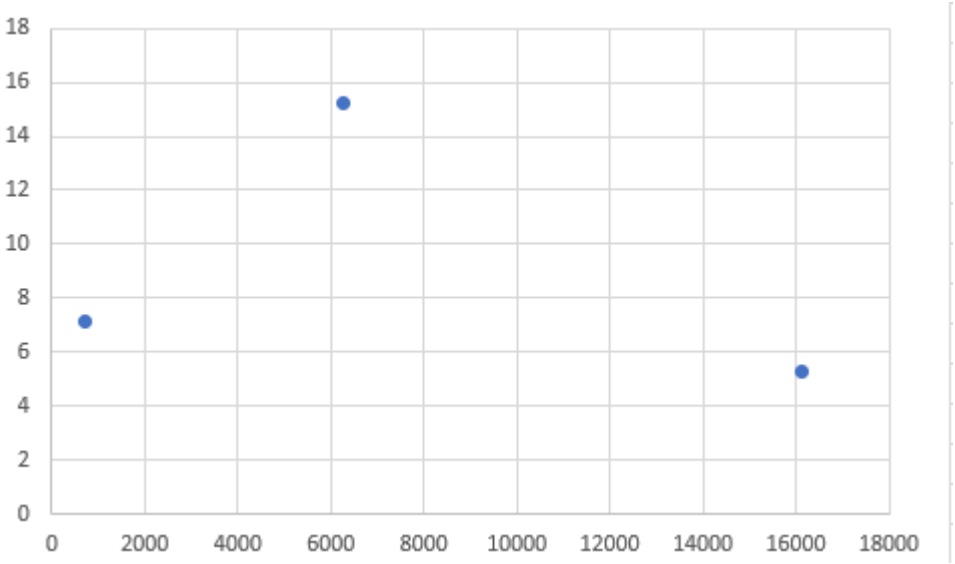
   shortest time = 731000 / (3 x 10^8) = 0.00243666 seconds

2. 103.231.241.180 - www.dlsu.edu.ph - 6,269.73km (approximately) from unsw

   shortest time = 6,270000 / (3 x 10^8) = 0.0209 seconds

3. 130.149.7.201 - www.tu-berlin.de - 16114.52km (approximately) from unsw

   shortest time = 16114.52 / (3 x 10^8) = 0.05371666666 seconds



The y-axis values are greater than 2 because of the delays of packets traveling along a network. Eg packets must be checked at each router slowing down the progress. Also, there may be high traffic, meaning packets have to queue at routers

2. Delays change overtime. This is because packets can take different routes or a high amount of traffic, slowing the packet down.

3. No, www.epfl.ch is hosted in San Francisco, USA

4. Packet size has no impact on propagation, processing, queueing delay. It does have an impact on transmission delay