Problem

- A 6GHz, 40km link uses two antennas with gains 40.4dB, both mounted at height 25m. The transmitter power is 0dBW.

- Find the received power under
  a) Free Space and
  b) Plane Earth conditions

Speed of light: c = 299 792 458 m / s

Link budget calculation

- Assuming FSPL for:
  - a LOS path of length of 2 km,
  - a 10W - 1 GHz transmitter,
  - a TX antenna gain of 10 dB and a RX antenna gain of 12dB and
  - 50% coupling efficiency at both ends,
- Calculate the received power
- For the above, assuming:
  - a bandwidth of 500 MHz,
  - a NF of 5 dB and the receiver is operating at a room temperature (27^{o}C)
- Calculate the SNR at the receiver