

Data Transfer HW 1

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In The Name Of God



Homework 1

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0.1 Question 1

0.1.1 A

$$P_{tx} = 10$$

$$Att = -20db$$

$$P_{rx} = ?$$

$$att = 10 * \log_{10} \left(\frac{P_{rx}}{P_{tx}} \right) \implies -20 = 10 * \log_{10}(\alpha) \implies \alpha = 10^{-2}$$

$$\alpha = \left(\frac{P_{rx}}{P_{tx}} \right) \implies \left(\frac{P_{rx}}{10} \right) = \frac{1}{100} \implies P_{rx} = \frac{1}{10}$$

0.1.2 B

0.2 Question 2

$$TotalAttenuation = -12 + 35 - 10 = 13db$$

$$+13 = 10 * \log_{10} \left(\frac{P_{rx}}{4} \right) \implies 10^{1.3} = \left(\frac{P_{rx}}{4} \right) \implies P_{rx} = 79.8$$