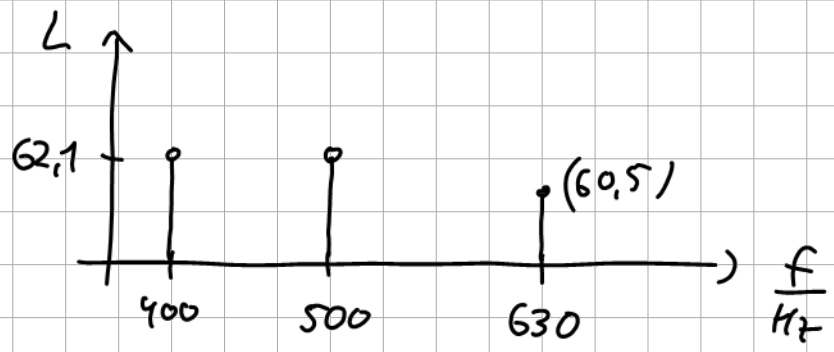
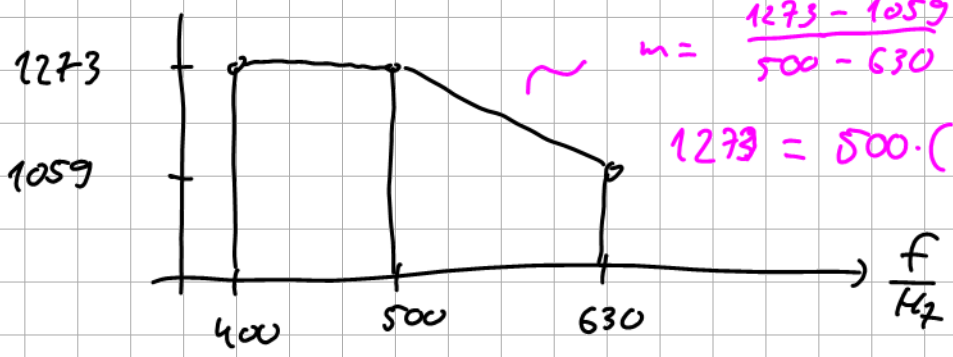
1)



$a = 10^{L/20}$



$m = \frac{1273 - 1059}{500 - 630} = -1.64$

$1273 = 500 \cdot (-1.64) + n \Rightarrow n = 2096$

$a(f) = 1273$

$a(f) = -1.64 \cdot f + 2096$

$P = P_1 + P_2$

$$P_1 = \int_{400}^{500} 1273^2 \, df = 1.62 \cdot 10^8$$

$$P_2 = \int_{500}^{630} (-1.64 f + 2096)^2 \, df$$

$$= \int_{500}^{630} 2.69 f^2 - 6875 f + 4393216 \, df$$

$$= \left[\frac{2.69}{3} f^3 - \frac{6875}{2} f^2 + 4393216 f \right]_{500}^{630}$$

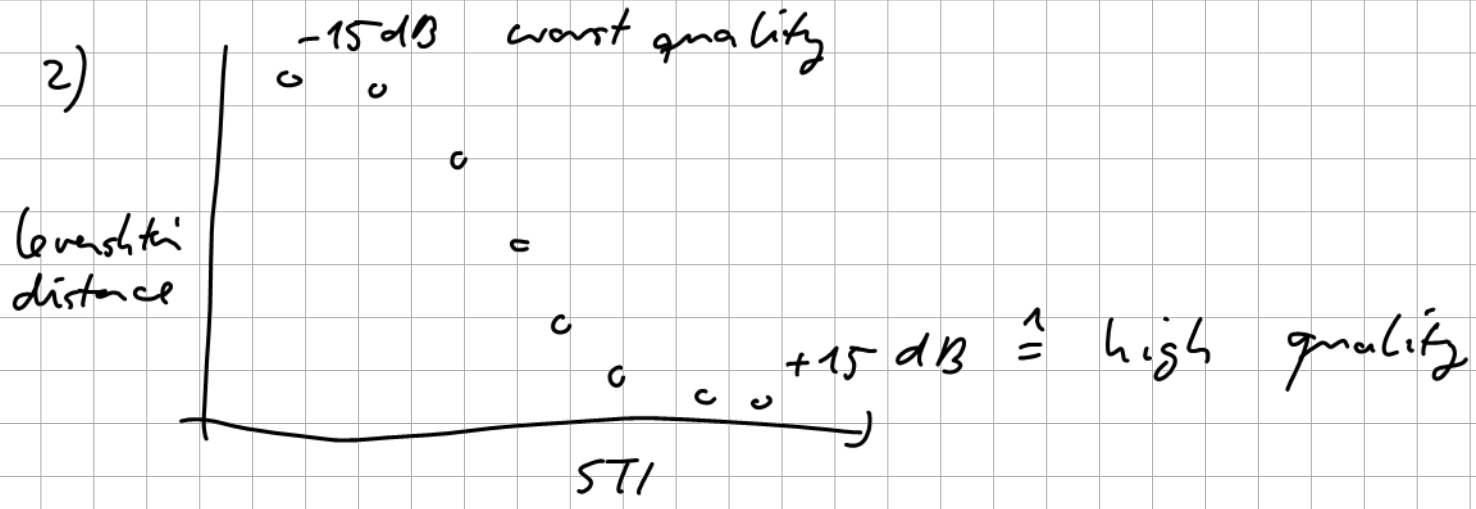
$$= \frac{2.69}{3} 630^3 - \frac{6875}{2} 630^2 + 4393216 \cdot 630$$

$$- \frac{2.69}{3} 500^3 + \frac{6875}{2} 500^2 - 4393216 \cdot 500$$

$$= 1.78 \cdot 10^8$$

$P = 3.40 \cdot 10^8$

2)


-15 dB worst quality
Levenshtein distance
+15 dB ≙ high quality
STI