

26. We use $\Delta\beta_{12} = \beta_1 - \beta_2 = (10 \text{ dB}) \log(I_1/I_2)$.

(a) Since $\Delta\beta_{12} = (10 \text{ dB}) \log(I_1/I_2) = 37 \text{ dB}$, we get $I_1/I_2 = 10^{37 \text{ dB}/10 \text{ dB}} = 10^{3.7} = 5.0 \times 10^3$.

(b) Since $\Delta p_m \propto s_m \propto \sqrt{I}$, we have $\Delta p_{m1}/\Delta p_{m2} = \sqrt{I_1/I_2} = \sqrt{5.0 \times 10^3} = 71$.

(c) The displacement amplitude ratio is $s_{m1}/s_{m2} = \sqrt{I_1/I_2} = 71$.