dB

dB

- "dB" are a relative measure and can make sense only in relation to another level.
- Saying “the level of this signal is 5 dB" is similar to saying "the cost of this candy bar is 5 cents more."
- When judging the response of your filter(s), measure them in relation to a good reference level (e.g., near DC or pi); the absolute level does not matter.
  - Be careful if your input signal does not have a flat spectrum at the reference point

dB

- Consider two signals: x and y and suppose x is 10x larger in magnitude than y
- *Power* = *voltage*^{2} / *resistance,* so P_x is 100x larger than P_y
- "Magnitude" dB
  - $20 * \log_{10}(x/y)$
  - $20 * \log_{10}(10y/y) = 20 * \log_{10}(10)$ = x is 20dB larger than y
- "Power" dB
  - $10 * \log_{10}(P_x / P_y)$
  - $10 * \log_{10}(100\ P_y / P_y) = 10 * \log_{10}(100)$ = x is 20dB larger than y