Return definitions

Traditionally simple returns are denoted with a capital R and log returns with a lower-case r. These are defined as:

$$R_t = (P_t - P_{t-1}) / P_{t-1} = P_t / P_{t-1} - 1$$

$$r_t = \log(P_t / P_{t-1}) = \log(P_t) - \log(P_{t-1})$$

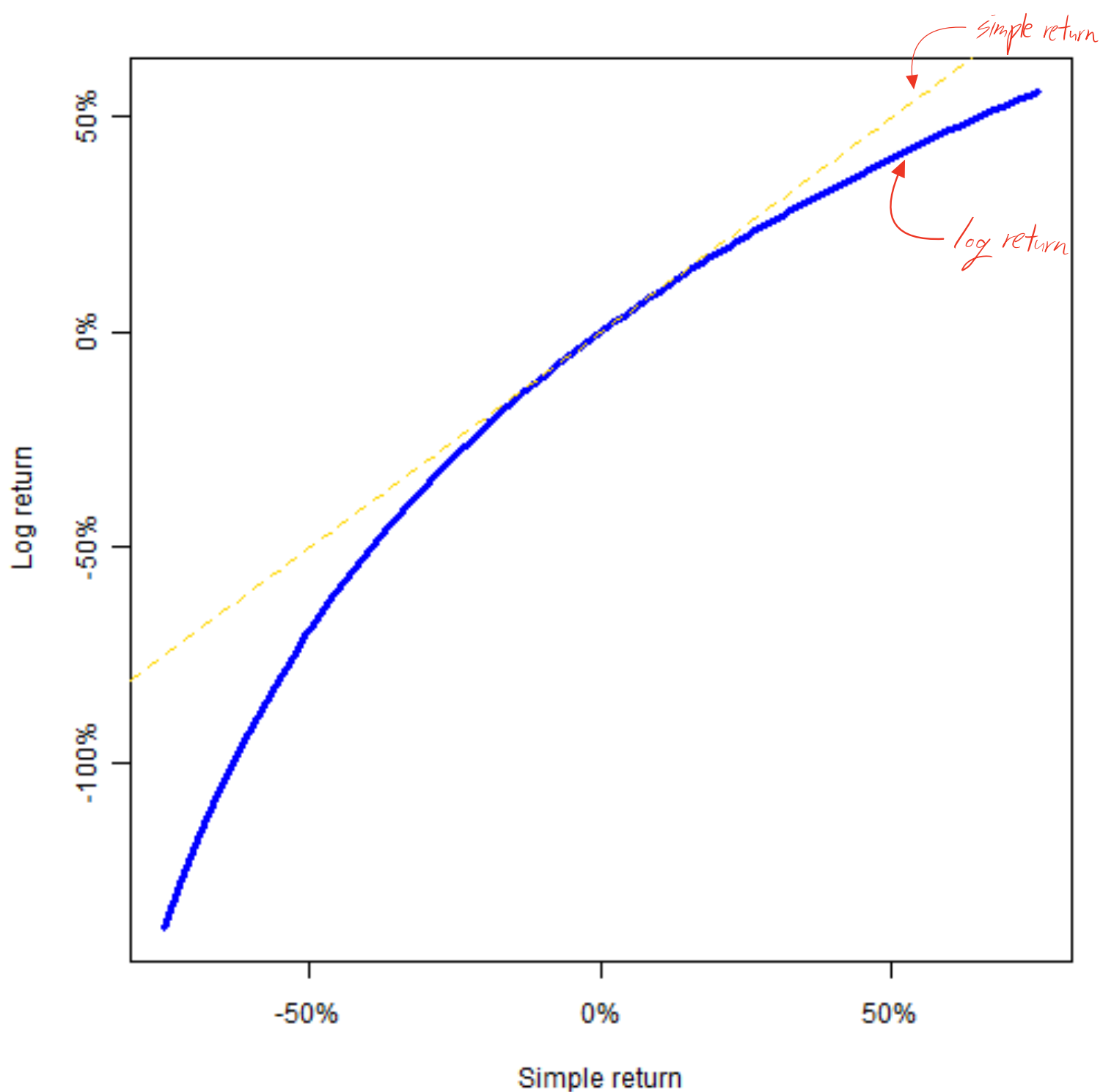Figure 1: Comparison of simple and log returns.

Figure 1 compares simple and log returns. It shows that log returns are always smaller than simple returns. (You can remember which is smaller because the smallest possible simple return is -100%, that is minus infinity for the log return.) For daily returns or intraday returns the differences between the two types are going to be trivial, generally.