1. Suppose the probability density function is given by $f(x) = cx^2$ for $-1 \leq x \leq 1$. What is the value of c (in irreducible fraction, e.g. 54/55)?

2. The past returns of a stock are chronologically arranged as

$$-2.1\%, 3.4\%, 1.7\%, -0.5\%, -3.2\%, 0.8\%, 0.3\%, -2.8\%, -0.6\%, -1.9\%.$$

   What is the 95-th percentile (2 decimals in %, e.g., 1.23%)?

3. Fund managers buy either value stocks or growth stocks. It is known that 20% (51.5%) of value (growth) stocks are liquidated after 2 years. On average, 30% fund managers liquidate their stocks after 2 years. What is the probability that fund managers will invest in a value stock (in irreducible fraction, e.g. 54/55)?

4. Let T with $t \in \{0, 1\}$ be the random variable indicating whether a trader is professional (t = 1) or not (t = 0), and A with $a \in \{0, 1\}$ be the variable indicating the accuracy of a trader's trading algorithm. A professional trader has accurate trading algorithm with probability $\mathbb{P}(A = 1|T = 1) = 0.98$, a non-professional trader with probability $\mathbb{P}(A = 1|T = 0) = 0.001$. One in hundred thousand traders is a professional, i.e., $\mathbb{P}(T = 1) = 0.00001$. What is the probability that a trader having accurate trading algorithm turns out to be professional (2 decimals in %, e.g., 12.34%)??

5. In a portfolio, 30% of the securities are growth stocks, 50% are blue chips (B), and the remaining are considered ordinary (O). In a ranking exercise, 65% of the growth stocks, 82% of the blue chips, and 50% of the ordinary ones were selected. Now, a stock is picked randomly from the portfolio. It is not ranked (NR) in the exercise. What is the probability that this stock you pick is a blue chip (2 decimals in %, e.g., 12.34%)?