Problem set 2

1) Compute the following expected values:
   a. Toss a coin 3 times, for each tail you receive 100 while for each head you receive 50
   b. you can receive £ x where x is a continuous random variable in the space [0, 100] with density function $f(x) = \frac{1}{50} - \frac{1}{5000}x$
2) Describe as a prospect the following opportunity: Toss a coin 2 times, for each tail you receive 100 while for each head you receive 0. Compute the expected payoff.
3) Consider the compound lottery where by equal chance you play the lottery in exercise 2 or $(150, 0.2; 100, 0{,}4)$. Write the resulting prospect.
4) Show that independence implies betweenness.
5) An individual faces the following three lotteries:
   a. Toss a coin 3 times, for each tail you receive 100 while for each head you receive -100
   b. Toss a coin 2 times, for each tail you receive 100 while for each head you receive -100
   c. $(-300, 0.25; 300, 0.25)$

   He prefers high outcomes respect to small ones. Checking for stochastic dominance, what you can say about the preferred lottery.

6) Asset integration. Consider an individual that face the lottery: $(-10, \frac{1}{3}; 10, \frac{2}{3})$. Check if it is acceptable for the following asset positions: w=10, w=100, w=1000.

7) Compute the certain equivalent (CE) and the risk premium of the lottery in exercise 2 when the utility function is $u(x) = -e^{-0.01x}$

8) Check the risk aversion and compute the measures of absolute and relative risk aversion of the following utility functions:

   a. $u(x) = -e^{-0.1x}$
   b. $u(x) = e^{0.1x}$

9) Consider the lottery $(100, p;\ 50,\ q)$. Using the Machina triangle (p on the vertical axis, 1-p-q on the horizontal one) represent the indifference curve passing for the point $p = \frac{1}{3}, q = \frac{1}{3}$ in the following three cases: $u(x) = x; u(x) = x^2; u(x) = \sqrt{x}$.