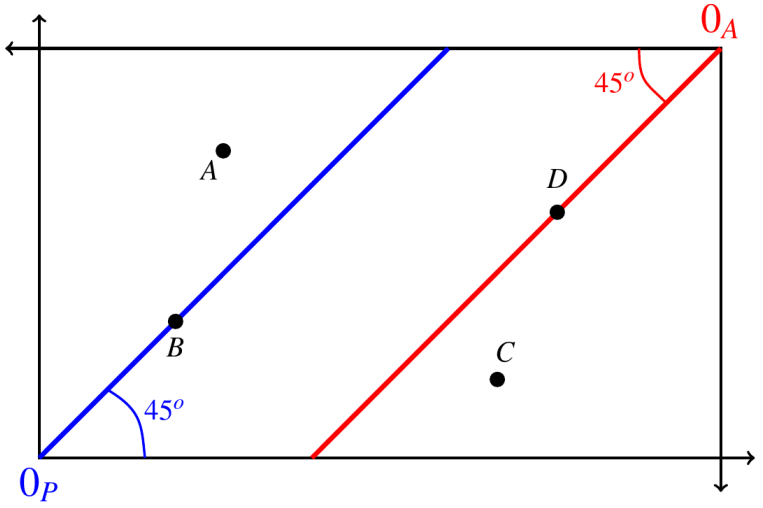
Problem 1 (Exercise 6.6). Using the Edgeworth box below, determine which (if any) contracts A, B, C, or D, are Pareto efficient in the following scenarios.



(a) The Principal is risk averse and the Agent is risk neutral.

(b) The Principal is risk neutral and the Agent is risk averse.

(c) Both the Principal and the Agent are risk averse.

(d) Both the Principal and the Agent are risk neutral.

Problem 2 (Exercise 6.8, Part a). Let the surplus in the good state be $X^g = \$1,206$ and the surplus in the bad state be $X^b = \$676$. The probability of the good state is 25%. The Principal's von Neumann-Morgenstern utility-of-money function is $U_P(m) = m$ while the Agent's von Neumann-Morgenstern utility-of-money function is $U_A(m) = \sqrt{m}$.

Find a Pareto efficient contract in the interior of the Edgeworth box at which the Principal's expected utility is 232.5.

Problem 3 (Exercise 6.16). Mister P wants to hire Miss A to run his firm. If Miss A works for Mister P, then one of two outcomes will occur: the profit of the firm will be \$520 (with probability 45/98) or it will be \$200 (with probability 53/98). Mister P's von Neumann-Morgenstern utility-of-money function is $U(m) = \sqrt{m}$, while Miss A is risk neutral. Consider the following contract, call it C: Miss A will get \$144 if the profit of the firm turns out to be \$520, and she will get \$90 if the profit of the firm turns out to be \$200.

(a) What is Mister P's expected utility from this contract?

(b) What is Miss A's expected utility from this contract?

(c) Find a Pareto efficient contract in the Edgeworth box, call it D, that Mister P considers to be just as good as C and Miss A prefers to C.

(d) Find a Pareto efficient contract in the Edgeworth box, call it E, that Mister P prefers to C and Miss A considers to be just as good as C.