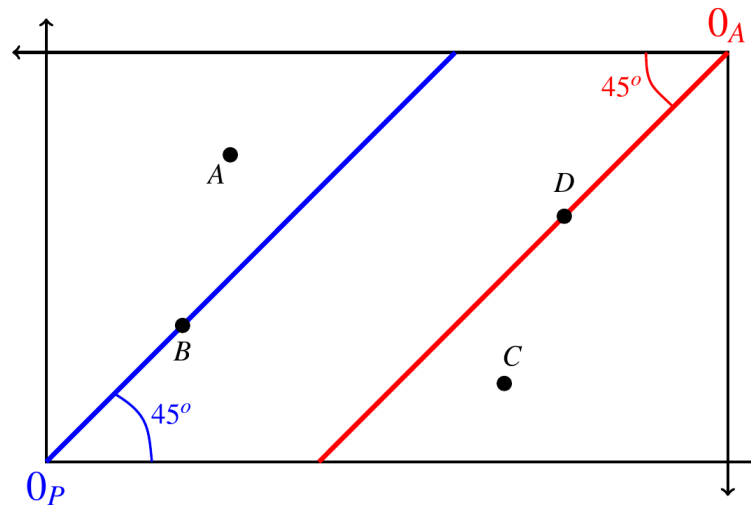


**Problem 1 (Exercise 6.6).** Using the Edgeworth box below, determine which (if any) contracts are Pareto efficient in the following scenarios.



- (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.