

5. (i) Two events A and B are mutually exclusive.

Given that $P(B) = p \neq 0$ and

$$P(A) = 3 \times P(B)$$

(a) draw a Venn diagram to illustrate this information,

(b) find the possible values of $P(B)$

(3)

- (ii) Two events C and D are such that

$$P(C|D) = 3 \times P(C) \text{ where } P(C) \neq 0$$

(a) Explain whether or not events C and D could be independent events.

(1)

Given also that

$$P(C \cap D) = \frac{1}{2} \times P(C) \text{ and } P(C' \cap D') = \frac{7}{10}$$

(b) find $P(C)$, showing your working clearly.

(7)