

## Section 2.4: cont'd

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example: Are mutually exclusive events  $A$  and  $B$  independent? (Assume that  $P(A)$  and  $P(B)$  are both non-zero.)

method #1:

if independent,  $P(AB) = P(A) \cdot P(B)$

$\underbrace{\hspace{2em}}_{\text{zero}} \quad \quad \quad \uparrow \quad \uparrow$   
 $\hspace{10em} \text{non-zero}$

$\therefore$  dependent

method #2:

[or  $P(A|B) = P(A)$ ]

if independent,  $P(B|A) = P(B)$

$\underbrace{\hspace{2em}}_{\text{zero}} \quad \quad \quad \underbrace{\hspace{2em}}_{\text{non-zero}}$

$\therefore$  same conclusion