

## Solution for review exercise 1 (chapter 1) in Pitman

Define the events

$B_0$  : 0 defective items in box

$B_1$  : 1 defective item in box

$B_2$  : 2 defective items in box

$I$  : Item picked at random defective

The question can be stated formally (mathematically) as

$$P(B_2|I) = \frac{P(I|B_2)P(B_2)}{P(I|B_0)P(B_0) + P(I|B_1)P(B_1) + P(I|B_2)P(B_2)} = \frac{1 \cdot 0.03}{0 \cdot 0.92 + 0.5 \cdot 0.05 + 1 \cdot 0.03} = \frac{6}{11}$$