Assignment 1

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1 Problem

(4.12) Determine P(E|F),if a die is thrown three times,
E : 4 appears on third toss
F : 6 and 5 appears on respectively on first and second toss.

2 Solution

Sample space = 6*6*6 = 216

Then the event E would be =
$\{(1,1,4),(2,1,4)$.....$(6,1,4)$
$(1,2,4),(2,2,4)$.....$(6,2,4)$
$(1,3,4),(2,3,4)$.....$(6,3,4)$
$(1,4,4),(2,4,4)$.....$(6,4,4)$
$(1,5,4),(2,5,4)$.....$(6,5,4)$
$(1,6,4),(2,6,4)$.....$(6,6,4)\}$

probability of event E , Pr(E) = $\frac{36}{216} = \frac{1}{6}$

Event F = $\{(1,6,5),(2,6,5),(3,6,5)$
$,(4,6,5),(5,6,5),(6,6,5)\}$

therefore ,
Probability of event F , Pr(F) = $\frac{1}{6}$

E∩F = $\{(6,5,4)\}$
Probability of E∩F , Pr(E∩F) = $\frac{1}{216}$

Probability P(E|F) = $\frac{P(E\cap F)}{P(F)} = \frac{1/216}{6/216} = \frac{1}{6}$