Assignment 1

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So, Pr (not A and not B) = $\frac{3}{8}$

Download all python codes from

https://github.com/sachinkarumanchi/ probability and random variables/blob/ assignment1/assignment1.py

and latex-tikz codes from

https://github.com/sachinkarumanchi/ probability and random variables/blob/ assignment1/Assignment1.tex

1 Problem

If A and B are two events such that Pr(A) = $\frac{1}{4}$, Pr $(B) = \frac{1}{2}$ and Pr $(AB) = \frac{1}{8}$. find Pr (notAandnotB).

2 Solution

Pr(notAandnotB) is equivalent to Pr(A'B'). from De-morgan's law,

$$(A'B') = (A+B)' (2.0.1)$$

(2.0.2)

Here, The sky blue colored region is the required and that is Pr(not A and not B).

Α



$$Pr(A'B') = Pr((A+B)')$$
 (2.0.3)

$$Pr((A + B)') = 1 - Pr(AB)$$

$$= 1 - (Pr(A) + Pr(B) - Pr(AB))$$
(2.0.5)

$$=1-\left(\frac{1}{4}+\frac{1}{2}-\frac{1}{8}\right) \tag{2.0.6}$$

$$= \frac{3}{8} \tag{2.0.7}$$

(2.0.8)

Therefore,

$$\Pr((A+B)') = \frac{3}{8}$$
 (2.0.9)

$$\Pr((A + B)') = \frac{3}{8}$$
 (2.0.9)
 $\implies \Pr(A'B') = \frac{3}{8}$ (2.0.10)

(2.0.11)

