AI1103 - Assignment 1

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and latex-tikz codes from

1) Misc Problem 6.25:
   If $\Pr(A) = 0.8$, $\Pr(B) = 0.5$ and $\Pr(B/A) = 0.4$
   Evaluate

   a) $\Pr(AB)$
   b) $\Pr(A/B)$
   c) $\Pr(A + B)$

2) Solution
   a) By the definition

   $$\Pr(B/A) = \frac{\Pr(AB)}{\Pr(A)} \quad (0.0.1)$$

   Substituting the values,

   $$\Pr(AB) = \frac{2}{5} \times \frac{4}{5} \quad (0.0.2)$$

   $$\Pr(AB) = \frac{8}{25} \quad (0.0.3)$$

   b) By the definition

   $$\Pr(A/B) = \frac{\Pr(AB)}{\Pr(B)} \quad (0.0.4)$$

   Substituting the values,

   $$\Pr(A/B) = \frac{\frac{8}{25}}{\frac{1}{2}} \quad (0.0.5)$$

   $$\Pr(A/B) = \frac{16}{25} \quad (0.0.6)$$

   c) By the result

   $$\Pr(A + B) = \Pr(A) + \Pr(B) - \Pr(AB) \quad (0.0.7)$$

Substituting the values,

$$\Pr(A + B) = \frac{4}{5} + \frac{1}{2} - \frac{8}{25} \quad (0.0.8)$$

$$\Pr(A + B) = \frac{98}{100} \quad (0.0.9)$$