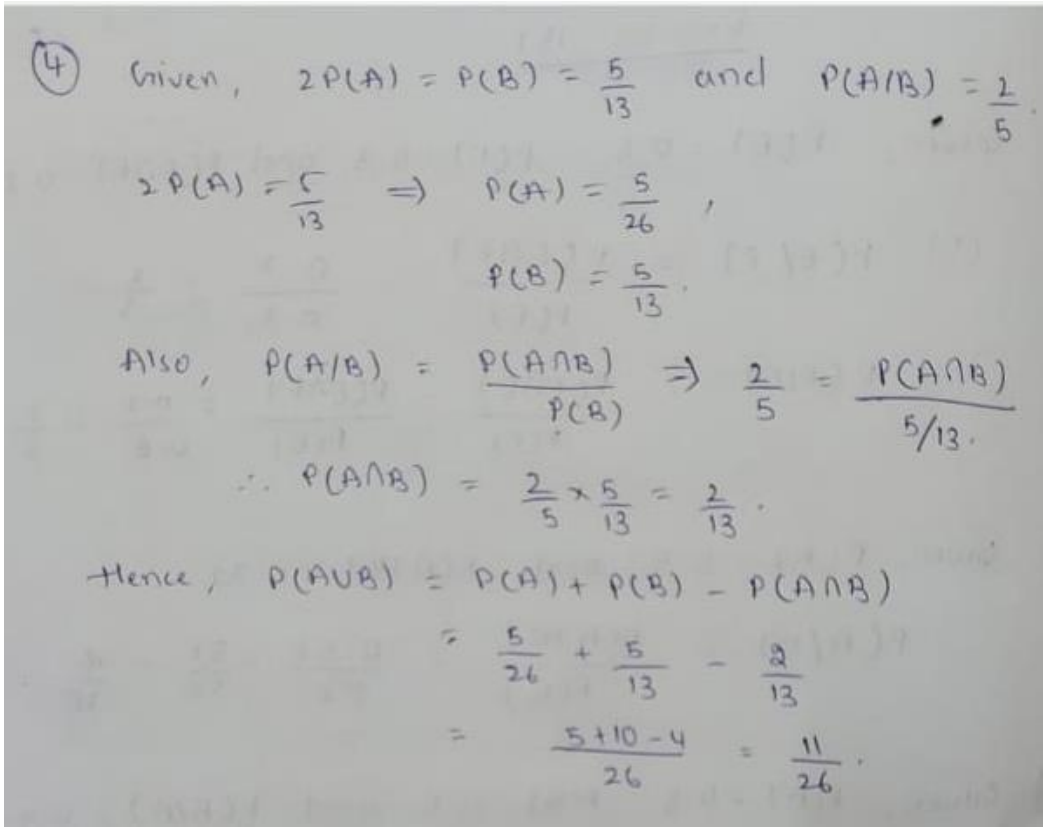
Related Problem with Solution :

4. Evaluate P (A U B), if 2P (A) = P (B) = 5/13 and P (A|B) = 2/5.



(4) Given, $2P(A) = P(B) = \frac{5}{13}$ and $P(A/B) = \frac{2}{5}$.

$2P(A) = \frac{5}{13} \Rightarrow P(A) = \frac{5}{26}$,

$P(B) = \frac{5}{13}$.

Also, $P(A/B) = \frac{P(A \cap B)}{P(B)} \Rightarrow \frac{2}{5} = \frac{P(A \cap B)}{5/13}$.

$\therefore P(A \cap B) = \frac{2}{5} \times \frac{5}{13} = \frac{2}{13}$.

Hence, $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$= \frac{5}{26} + \frac{5}{13} - \frac{2}{13}$

$= \frac{5+10-4}{26} = \frac{11}{26}$.