

Resumen soluciones parte tres tarea uno

6

$$\begin{aligned} \text{(a)} \quad P\{A \text{ not hit}\} &= P\{A \text{ not hit} \mid \text{at least one is hit}\} \\ &= P\{A \text{ not hit}, B \text{ hit}\} / P\{\text{at least one is hit}\} \\ &= q_B p_A / (1 - q_A q_B) \end{aligned}$$

$$\begin{aligned} \text{(b)} \quad P\{\text{both hit}\} &= P\{\text{both hit} \mid \text{at least one is hit}\} \\ &= P\{\text{both hit}\} / P\{\text{at least one hit}\} \\ &= p_A p_B / (1 - q_A q_B) \end{aligned}$$

$$\text{(c)} \quad (q_A q_B)^{n-1} (1 - q_A q_B)$$

$$\begin{aligned} \text{(d)} \quad P\{n \text{ rounds} \mid A \text{ unhit}\} &= P\{n \text{ rounds}, A \text{ unhit}\} / P\{A \text{ unhit}\} \\ &= \frac{(q_A q_B)^{n-1} p_A q_B}{q_B p_A / (1 - q_A q_B)} \\ &= (q_A q_B)^{n-1} (1 - q_A q_B) \end{aligned}$$

$$\begin{aligned} \text{(e)} \quad P(n \text{ rounds} \mid \text{both hit}) &= P\{n \text{ rounds both hit}\} / P\{\text{both hit}\} \\ &= \frac{(q_A q_B)^{n-1} p_A p_B}{p_B p_A / (1 - q_A q_B)} \\ &= (q_A q_B)^{n-1} (1 - q_A q_B) \end{aligned}$$

Note that (c), (d), and (e) all have the same answer.