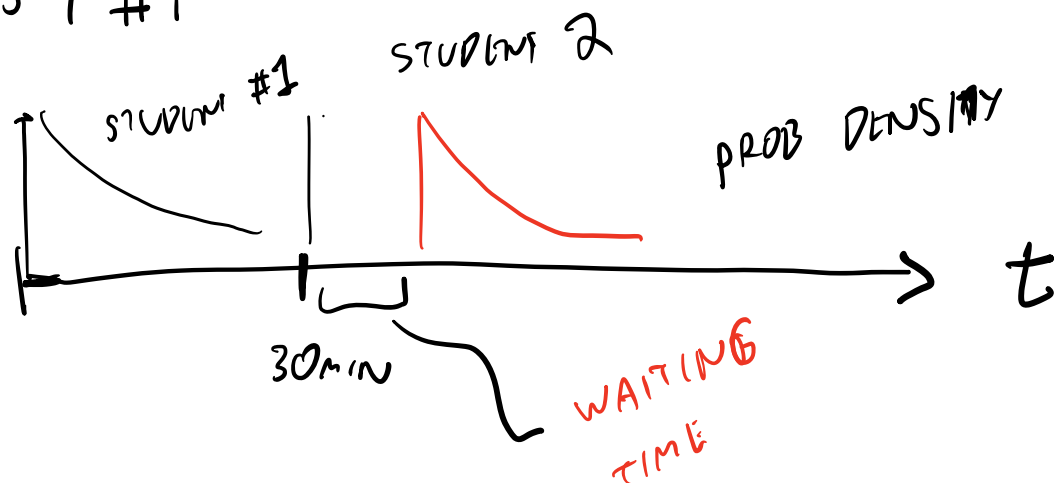


PSQ #1



S - ALL POSSIBLE EVENTS

$$S = A \cup B, \quad A \cap B = \emptyset$$

nothing

TOTAL PROBABILITY

$$P(Z) = P(Z|A)P(A) + P(Z|B)P(B)$$

$$E[Z] = E[Z|A]P(A) + E[Z|B]P(B)$$

$$E[\text{wait for overrun}] = \int_0^{\infty} (\text{wait duration}) \cdot \underset{\substack{\uparrow \\ \text{DENSITY}}}{p(\text{wait duration})} dt$$

$$E[\text{2ND START TIME}] = \int_{30}^{\infty} \left(\text{2ND START TIME} \right) \cdot \underset{\substack{\uparrow \\ \text{DENSITY}}}{p(\text{WAIT DURATION})} dt$$

$$E[T_{\text{wait}}] = E[\text{ } | T_1 < 30] P()$$

$$\rightarrow \boxed{E[\text{ } | T_1 > 30] P()}$$

\downarrow
 30 MIN?

FROM $1 - \text{CDF} = \left(\frac{1}{e}\right)$

$$E[T_{\text{wait}}] = \int_{30}^{\infty} (t - 30) p_T(t) dt = \boxed{\frac{30 \text{ MIN}}{e}}$$

$$\begin{aligned}
 E[T_{\text{wait}}] &= 0 + \\
 &E[T_{\text{wait}} | T_1 > 30] \cdot P(T_1 > 30) \\
 &= E[T_{\text{wait}} | T_1 > 30] \cdot \left(\frac{1}{e}\right)
 \end{aligned}$$

$$= \frac{30 \text{ nm}}{e}$$

PS4 #2

