

extra term

$$\begin{aligned}P(W > t) &= P(X_1 > t) + \cancel{P(X_2 > t)} \\&\quad - P((X_1 > t) \cap (X_1 > t)) \\&= P(X_1 > t) + P(X_2 > t) \\&\quad - P(X_1 > t)P(X_2 > t) \\&= e^{-\lambda t}te^{-\lambda t} - (e^{-\lambda t})(e^{-\lambda t}) \\&= Ze^{-\lambda t} - e^{-2\lambda t}\end{aligned}$$