

Part 2:

$$F(y) = P(Y \leq y)$$

$$= 1 - P(Y \geq y)$$

but we are looking for the min, which means we need the P that it is ~~last~~ LONGER than the other two

$$= 1 - P(A \geq y \& B \geq y \& C \geq y)$$

$$= 1 - P(A \geq y) \cdot P(B \geq y) \cdot P(C \geq y) \text{ (independent)}$$

$$= 1 - F(A) * F(B) \cdot F(C)$$

$$= 1 - \left(e^{-\frac{y}{80}}\right)^3$$

$$F(y) = 1 - e^{-\frac{3y}{80}} \quad (\text{CDF of } y)$$

$$\text{PDF} = \frac{d}{dx} (\text{CDF})$$

$$f(y) = \frac{3}{80} e^{-\frac{3y}{80}}$$

(follows an exponential curve)