LAB 4

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1: $A \sim Exp(\frac{1}{80})$
$B \sim Exp(\frac{1}{80})$
$C \sim Exp(\frac{1}{80})$

$Y = \max(A, B, C)$

first, the CDF

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

$= P(A \leq y \ \& \ B \leq y \ \& \ C \leq$

(independent) $= P(A \leq y) \cdot P(B \leq y) \cdot P($

$= (1 - e^{-y/80}) \cdot (1 - e^{-y/80}) \cdot ($

$= (1 - e^{-y/80})^3$

CDF of Y $\longrightarrow$ $F(y) = 3e^{\frac{-y}{40}} - 3e^{\frac{-y}{80}} - e^{\frac{-3y}{80}} +$

$PDF = \frac{d}{dx} CDF$

$= \frac{d}{dx}\left(3e^{-y/40} - 3e^{-\frac{y}{80}} - e^{-3y/80}\right.$

$F(y) = \frac{-3}{40} e^{\frac{-y}{40}} + \frac{3}{80} e^{-\frac{y}{80}} + \frac{3}{80} e^{\frac{-3y}{80}}$ (PDF of Y)