

Problem 129

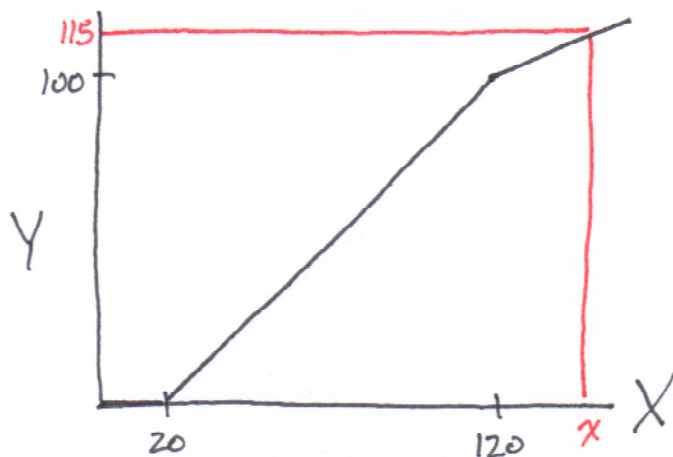
X : health care cost
 Y : reimbursement

$F(x)$: probability health care costs
are equal to or less than x

$$F(x) = 1 - e^{-\frac{x}{100}}$$

$$G(y) = \begin{cases} 0 & 0 \leq x \leq 20 \\ x - 20 & 20 \leq x \leq 120 \\ .5(x - 120) + 100 & x \geq 120 \end{cases}$$

Want $G(115)$



$$115 = .5(x - 120) + 100$$

$$15 = .5(x - 120)$$

$$30 = x - 120$$

$$150 = x$$

$$G(115) = P(X < 150)$$

$$\star = P(X < 150 | X > 20)$$

$$= \frac{P(20 < X < 150)}{P(X > 20)}$$

$$= \frac{F(150) - F(20)}{1 - F(20)}$$

$$= \frac{.77687 - .181269}{1 - .181269} \approx .727$$

★ We are given that reimbursements are positive

$$F(20) = 1 - e^{-\frac{20}{100}} = .181269$$

$$F(150) = 1 - e^{-\frac{150}{100}} = .77687$$

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