

$$2 \quad (a) \quad P(X \geq 5)$$

$$= 1 - P(X \leq 5)$$

$$= 1 - \frac{5}{36} = 1 - \frac{1}{6} = \frac{5}{6}$$

$$(b) \quad P(Y \geq 20 | X \geq 10)$$

$$= P(\{Y \geq 20\} \cap \{X \geq 10\}) / P(X \geq 10)$$

$$= P(Y \geq 20) / P(X \geq 10)$$

$$= [1 - P(Y \leq 20)] / [1 - P(X \leq 10)]$$

$$= (1 - \frac{2}{3}) / (1 - \frac{1}{3})$$

$$= \frac{1}{2}$$