

Problem 1.3

Q: (a) How long will it last? average

$$\text{Solution } E(X) = \frac{1}{p} = \frac{1}{0.01} = 100 \text{ (operations)}$$

(b) 10 \rightarrow 30 p ?

$$\text{Solution } P(X > 10 + 30 | X > 10)$$

$$= P(X > 30)$$

$$= (1-p)^{30}$$

$$= (1-0.01)^{30}$$

$$= 0.7397$$

(c) $m \rightarrow 40$

$$P(X > \overset{40+m-m}{\cancel{m+40}} | X = m)$$

$$= P(X > \overset{40-m}{\cancel{40}})$$

$$= (1-0.01)^{40-m}$$

$$= 0.99^{40-m}$$

