

October, 6

Math 333-005, fall 2005

Name: _____

Quiz #3

Student

ID: _____

I pledge I have not violated the NJIT Honor Code _____

Must show all work for full credit!

An insurance company offers its policyholders a number of different premium payment options. For a randomly selected policyholder, let X = the number of months between successive payments. The cdf is as follows:

$$F(x) = \begin{cases} 0 & x < 1 \\ 0.25 & 1 \leq x < 2 \\ 0.45 & 2 \leq x < 4 \\ 0.50 & 4 \leq x < 6 \\ 0.60 & 6 \leq x < 12 \\ 1.0 & 12 \leq x \end{cases} . \text{ Compute the probabilities } P(1 \leq X < 6) \text{ and } P(X \geq 2).$$

(10 pts)

$$P(1 \leq X < 6) = F(6^-) - F(1^-) = 0.5 - 0 = 0.5 \text{ or}$$

$$P(1 \leq X < 6) = P(1 \leq X \leq 4) = p(1)+p(2)+p(4) = (0.25-0) + (0.45-0.25)+(0.50-0.45)$$

$$= 0.25 + 0.20 + 0.05$$

$$= 0.50$$

$$P(X \geq 2) = 1 - F(2^-) = 1 - 0.25 = 0.75 \text{ or}$$

$$P(X \geq 2) = 1 - P(X < 2) = 1 - P(X \leq 1) = 1 - F(1) = 1 - 0.25 = 0.75 \text{ or}$$

$$P(X \geq 2) = p(2)+p(4)+p(6) +p(12) = 0.20 + 0.05 + (0.6 - 0.5) + (1.0 - 0.6) = 0.25+0.10+0.40 = 0.75.$$