

Jan. 18th, 2013

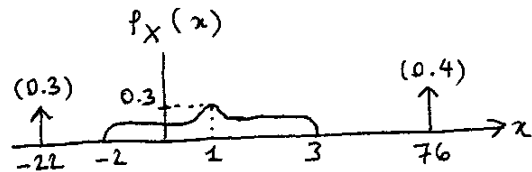
Name:

ID Number:

	Q1	Q2	Q3	Q4	Tot.
Points	25	25	25	25	100
Grade					

Q.1. Let X be a r.v. with $p_X(x)$ given below. Evaluate:

- a) $P(-3 < X \leq 4)$. b) $P(3 < X \leq 76)$. c) $P(X = -22)$. d) $P(X = 1)$.
e) $P(-\infty < X \leq -18)$. f) $F_X(5)$.



Q.2. Let X and Y be two r.v.'s jointly distributed with

$$p_{X,Y}(x,y) = \begin{cases} 4xy, & 0 \leq x \leq 1 \\ & y \leq 2x \\ 0, & \text{o.w.} \end{cases}$$

Are X, Y independent? Are X, Y correlated?

Q.3. A die is weighted so that the outcomes produce the following probability distribution:

outcome	1	2	3	4	5	6
probability	0.1	0.3	0.2	0.2	0.1	0.1

Define a r.v. X such that it takes on values which are equal to the half of the outcomes.

- a) Plot $p_X(x)$. b) Plot $F_X(x)$. c) Let $A = \{x | x \leq 2\}$, Find $p(A)$.

Q.4. Which of the following functions can be a valid CDF of a r.v.? Comment on each of them. Find the PDF for the valid one(s).

