Ali Awari

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Discrete Structures II

Problem Set #4

1. Given each function, what is the numerical value of k that allows f(x) to be a probability distribution?
2. A loaded dice is rolled such that the number “2” is three times as likely to appear as any other number. Let X be the discrete random variable corresponding to the number of times a “5” appears in 3 rolls of the dice. What is the probability distribution, f(x) and F(x) for X?
3. Given the continuous distribution :
   1. What is the value of the constant k?
   2. ?
4. A biased coin is tossed four times. The coin is seven (7) times as likely to land on “heads” than “tails”. Let X be the discrete random variable corresponding to the number of “heads”. What is the probability distribution, f(x) for X? Furthermore, if you receive $5 for every “head” tossed and $50 for each “tail” tossed, what can you expect to win?