Solution to Homework 8

Question. If a value is -1 with probability 0.3, 0 with probability 0.5, and 1 with probability 0.2, what is the value $F(-0.5)$ of the corresponding cumulative distribution function? what is the value of $F(0.5)$?

Answer.

- Out of the three possible cases $x = -1$, $x = 0$, and $x = 1$, the only case when $x \leq -0.5$ is when $x = -1$. The probability of this case is 0.3, so:

$$F(-0.5) = \text{Prob}(x \leq -0.5) = 0.3.$$

- We have two cases when $x \leq 0.5$: the cases of $x = -1$ and $x = 0$. Thus, the probability that $x \leq 0.5$ is equal to the sum of these two cases:

$$F(0.5) = \text{Prob}(x \leq 0.5) = 0.3 + 0.5 = 0.8.$$