3. [12 points] Let $p(x)$ be a **probability density function** (pdf) such that

$$p(x) = \begin{cases} 1/10, & -3 \le x < 1, \\ 3/5, & 1 \le x < 2, \\ 0, & \text{otherwise.} \end{cases}$$

a. [7 points] Find the cumulative distribution function $P(x)$ corresponding to $p(x)$.

Answer: $P(x) = \begin{cases} \_\_\_\_\_, & x < -3 \\ \_\_\_\_\_, & -3 \le x < 1, \\ \_\_\_\_\_, & 1 \le x < 2, \\ \_\_\_\_\_, & x \ge 2 \end{cases}$

b. [5 points] Find the mean value of x. Show all your work.

Answer: _____