A1110 Assignment 9

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Example 5-17: If x takes the values 1, 2, ... 6 with probability 1/6, then find E(x).
Solution: For discrete random variables,

$$E(x) = \sum_i p_i x_i \tag{1}$$

Given,

$$p_i = P(X = x_i) = \frac{1}{6} \tag{2}$$

where $x_i \in \{0, 1, 2, 3, 4, 5, 6\}$ Therefore,

$$E(x) = \frac{1}{6}\sum_i x_i \tag{3}$$

$$= \frac{1}{6}(1 + 2 + 3 + 4 + 5 + 6) \tag{4}$$

$$= \frac{21}{6} \tag{5}$$

$$= \frac{7}{2} \tag{6}$$

$$= \boxed{3.50} \tag{7}$$