

Problem 3.43

A random variable is defined by:

$$X = \begin{cases} -2 & \text{w/prob } \frac{1}{3} \\ 3 & \text{" } \frac{1}{2} \\ 1 & \text{" } \frac{1}{6} \end{cases}$$

Find $\langle X \rangle$, $\langle 2X+5 \rangle$, $\langle X^2 \rangle$.

$$\langle X \rangle = \frac{1}{3} \cdot (-2) + \frac{1}{2} \cdot 3 + \frac{1}{6} \cdot 1 = \underline{1}$$

$$\langle 2X+5 \rangle = 2\langle X \rangle + 5 = 7$$

$$\langle X^2 \rangle = \frac{1}{3} \cdot 4 + \frac{1}{2} \cdot 9 + \frac{1}{6} \cdot 1 = 6$$