

$$E_{X \sim U[-1,1]}[(c+x)^2] = c^2 + 2c \cdot E_{X \sim U[-1,1]}[X] + E_{X \sim U[-1,1]}[x^2] =$$

$$= c^2 + 2c \cdot 0 + \frac{1}{2} \int_{-1}^1 x^2 dx = c^2 + \frac{1}{3} \quad \leftarrow g_{PD}^{(c)}$$