

Consider the following three random variables:

$$X = \begin{cases} +1 & \text{with probability } 1/2 \\ -1 & \text{with probability } 1/2 \end{cases}$$

$$Y = \begin{cases} +1000 & \text{with probability } 1/2 \\ -1000 & \text{with probability } 1/2 \end{cases}$$

$$Z = \begin{cases} 0 & \text{with probability } 1 \end{cases}$$

What are $\mathbb{E}(X)$, $\mathbb{E}(Y)$, and $\mathbb{E}(Z)$?

If you could play a game in which X , Y , or Z were your winnings, which one would you prefer?