

( $\approx$  Example 3.46)

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?