

**Example 10** Find the domain of the function  $f$  given by  $f(x) = \frac{1}{\sqrt{[x]^2 - [x] - 6}}$

**Solution** Given that  $f(x) = \frac{1}{\sqrt{[x]^2 - [x] - 6}}$ ,  $f$  is defined if  $[x]^2 - [x] - 6 > 0$ .

$$\text{or } ([x]-3)([x]+2) > 0,$$

$$\Rightarrow [x] < -2 \quad \text{or} \quad [x] > 3$$

$$\Rightarrow x < -2 \quad \text{or} \quad x \geq 4$$

Hence Domain =  $(-\infty, -2) \cup [4, \infty)$ .