

α) Είναι:

$$\begin{aligned} |x-2| < 3 &\Leftrightarrow -3 < x-2 < 3 \Leftrightarrow \\ \Leftrightarrow -3+2 < x-2+2 < 3+2 &\Leftrightarrow \\ \Leftrightarrow -1 < x < 5 \end{aligned}$$

β) Ισχύει ότι:

$$\begin{aligned} -1 < x < 5 &\Leftrightarrow \\ \Leftrightarrow (-1 < x \text{ και } x < 5) &\Leftrightarrow \\ \Leftrightarrow (0 < x+1 \text{ και } x-5 < 0) \end{aligned}$$

Άρα:

$$|x+1| = x+1 \quad \text{και} \quad |x-5| = -(x-5) = 5-x$$

Τότε:

$$K = \frac{|x+1|+|x-5|}{3} = \frac{x+1+5-x}{3} = \frac{6}{3} = 2$$