Exercise 68

Absolute Value Evaluate each expression.

$$\textbf{(a)} \ \ |\sqrt{5} - 5| \qquad\qquad\qquad \textbf{(b)} \ \ |10 - \pi|$$

Solution

The absolute value of a number is defined by

$$|x| = \begin{cases} x & \text{if } x > 0 \\ -x & \text{if } x < 0 \end{cases}.$$

Since $\sqrt{5} - 5 < 0$,

$$|\sqrt{5} - 5| = -(\sqrt{5} - 5) = 5 - \sqrt{5}.$$

And since $10 - \pi > 0$,

$$|10 - \pi| = 10 - \pi.$$