3.2.28

AI25BTECH11012 - GARIGE UNNATHI

Question:
Find if a triangle ABC can be constructed in which $(\mathbf{B}-\mathbf{A})$ = 5cm, $\angle\mathbf{A}$ = 45° and $(\mathbf{C}-\mathbf{B})$ $+(\mathbf{C}-\mathbf{A})$= 5cm.
Solution:

Variable	Parameter	Value
$\boldsymbol{AB}$	c	5 cm
$\boldsymbol{BC}$	a	-
$\boldsymbol{AC}$	b	-
$\angle\mathbf{A}$	-	45°

TABLE 0: Variables Used

Given that :

$$a + b = 5cm$$
$$c = 5cm$$

Using the triangle inequality, for any triangle ABC :

$$(\mathbf{B}-\mathbf{A}) < (\mathbf{C}-\mathbf{B}) + (\mathbf{C}-\mathbf{A}). \tag{0.1}$$
$$c < a + b \tag{0.2}$$

Which is not true.

Hence we cannot form a triangle with the given conditions.