Answer on Question#38389 – Math - Calculus

Triangle ABC has vertices A (4, 7, 7), B (1, 6, 5) and C (-2, 9, 8). What kind of triangle is ΔABC? Justify your answer.

Solution:

Edge length:

$$\mathrm{AB} = \sqrt{(4-1)^2 + (7-6)^2 + (7-5)^2} = \sqrt{14}$$

$$\mathrm{AC} = \sqrt{(4+2)^2 + (9-7)^2 + (8-7)^2} = \sqrt{41}$$

$$\mathrm{BC} = \sqrt{(1+2)^2 + (9-6)^2 + (8-5)^2} = 3\sqrt{3}$$

It is right triangle, we can prove it using Pythagorean theorem:

$$\mathrm{AC}^2 = \mathrm{AB}^2 + \mathrm{BC}^2$$

$$41 = 27 + 14$$

Answer: it is right triangle.